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Trade & commerce

TRADE AND COMMERCE.

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INTRODUCTION.

The business world of today is vastly different from that in which the merchant of old performed his work. Were it possible for him to revisit the scenes where in the long ago he plied his craft, he would not only be astounded by the present method of doing the things he did, but he would be considerably perplexed by the many new methods and devices, the obstacles and the problems which today are part of that universal exchange known as Trade and Commerce. He would find that his successor and inheritor —the modern merchant—had replaced the camel, the packhorse, the crawling cart and the little sailing craft with the locomotive, the steamer, the trolly car and the motor wagon; he would find that miracles were performed by telegraph and telephone, and that altogether his descendants were almost complete masters of the technical difficulties of former times. But he would also find that the great changes and the great gains have created new problems to meet, new difficulties to overcome and while these may not be as dangerous as those of preceding eras, they are more complex, more subtle.

A modern merchant need not be a combination of explorer, soldier, sailor, transporter, peddler, banker, wholesaler and retailer, as was the tradesman of old; but he must possess a vast and varied store of special knowledge; without this he cannot have an intelligent grasp of condi-

tions or ability to act quickly and judiciously, to compete successfully.

The magnitude of existing commerce, the keenness of today's competition demand efficiency. Today no one has a monopoly over improved means of intercourse; the same market can be reached, in fact, is being reached from various quarters, by many manufacturing and mercantile concerns. The dealer of old, being alone in the field, had in most instances but to show his goods, to be assured of a sale and of a highly profitable return on his venture, but the merchant of today, having many competitors, must rely mainly upon superior ability.

By modern merchant, I do not mean the small shopkeeper whose horizon is bounded by the houses which line his street, or the clerk who does not see beyond his columns of figures, but the enlightened merchant, who is a necessary auxiliary to the agriculturer and the manufacturer of a country. It is he who under the present economic arrangement, to a very large extent, drives the wheels of industry, he who is responsible for the ceaseless activity in mines and in forests, in blast furnaces and in rolling mills; it is he who leads a nation to its position of industrial and commercial supremacy.

The work of such commercial leaders is not chance work, they cannot be mere experimentalists; they must be fully equipped to perform their functions. Realizing this our most advanced nations promote and encourage commercial education. Germany, which was the first to grasp the significance of the quiet work of the school teacher in order to be victorious in war, was also the first to understand the necessity for establishing a net work of secondary and higher technical commercial schools in order to conquer the world in time of peace. It was Germany that first reared a class of trained manufacturers and merchants, and it was because of their intelligent activity that she,

a country of comparatively poor resources, has achieved most wonderful results in international trade.

Commercial education teaches the future merchant where the best and the cheapest raw materials and other commodities needed by his countrymen may be obtained and where goods produced at home are in the greatest demand; it familiarizes him with the materials and tools of trade, with the routes of commerce and with the possibilities and limitations of modern means of transportation. Commercial education acquaints the merchant with the tariff of his own country as well as with customs laws and regulations of other lands; it gives him a knowledge of the currency, of the systems of weights and measures used by various nations of commercial importance; it instructs him in commercial law, so that he may know how to protect his rights and how to avoid the usually expensive litigations; it gives him command over foreign languages, which permits him to approach present and prospective customers in their tongue, thereby winning their confidence and making business friends.

Commercial education teaches, also, the principles of political economy, giving an insight into the relation between different factors of production, into the laws of exchange, showing the interdependence between supply and demand, cost and price, revealing the effects of distribution upon consumption and consumption upon production; finally it develops an aptitude for trade, a desire to work with a spirit of order and initiative, with an understanding that the work is worth while, that business success may be achieved without losing the respect of fellow workers in other lines of human endeavor; it develops traits of thrift and of integrity, of consideration for the needs and wants of others, whoever these others may be and wherever they may dwell.

I. THE COMMERCE OF THE PAST.

The commerce of the past, whether we consider it, as it was carried on in times of antiquity, in the Middle Ages or during the centuries which preceded the dawn of our modern era, was so unlike the commerce of the present, that its study would for us be impractical unless it were for the purpose of emphasizing the entirely different problems and methods of present-day business.

The beginnings of trade are lost in antiquity, but we know that in earliest communities barter did not exist, as all worked together, each helping the other, and the product of joint labor was communal property. When there was a surplus product, a natural desire arose to exchange it for something which the community did not produce and which it seemed worth while to have.

In its development the first obstacle commerce had to overcome was, as far as we are able to judge, the feeling of antagonism which existed between different communities. For thousands of years they warred against each other; if they met, it was only as enemies to settle their disputes, their real and their imaginary grievances, to satisfy their lust for plunder. As the result of their centuries of animosity they could not at first understand any other less antagonistic relation; thus when trade first began, they necessarily approached each other with suspicion and dislike; it required many centuries of gradual approach before these feelings were eradicated. When a new relation, that of trade, appeared possible, strangers began meeting on the boundary lines of their respective regions bringing their wares for exchange. Hereditary suspicion made it necessary to gather goods intended for exchange on one spot, the market place, in this way permitting a careful inspection of every article as well as a simultaneous transfer of commodities with the transfer of title to them. When more distant communities began to participate in

this exchange, there arose a separate class of dealers, who took upon themselves the work of bringing wares from one locality to another. After this, the overcoming of distances became one of the main considerations of trade.

The merchant of the past was handicapped by impassable highways; the forest, the desert, the swamp and the mountain, all conspired against him; nature met him at almost every step with a barrier. Carrying goods from one isolated center to another, sailing the trackless sea in order to reach far-off harbors, were hazardous and laborious undertakings; they required pluck and perseverance, inducements of unusually large profits and an unlimited amount of optimism; they required also in case of sea traffic, some nautical knowledge on the part of the merchant. The merchant of old had no common carriers to rely upon and therefore he had to provide and to supervise his own transportation facilities.

On land, in some places a bridle pass permitted the use of pack animals, in others even such a pass did not exist and the muscular strength of man was the only means for carrying the load. Gradually improvements were introduced. The pass from continued use became a wagon road; crude vehicles were impressed into service and draught animals supplanted beasts of burden. It is hard for us to realize what a step in advance was the harnessing of the horse and its employment on the battlefields of commerce. However, even the best draught animal on a first-class road accomplishes comparatively little and is a very expensive medium of transportation, entirely inadequate for the overcoming of long distances.

As to sea-commerce, the ocean was the same vast expanse that it is today, but the coasts were unsurveyed, light-houses and saving stations were lacking, and the mariner merchant on his small sailing craft, had no compass to guide him, no chart to show him the direction of winds and currents, no instruments to warn him of approach-

ing storms. His journey was largely a matter of chance, its long duration a series of perilous adventures, very unlike the passage of a modern steamer which usually reaches her destination on schedule time.

Nature's barriers were not the only ones that the commerce of the past had to overcome. The trackless roads were unprotected. To the dangers of being lost, of death by starvation because of lack of provisions, was added the risk of attacks from nomadic robbers. In the East, where the first important trading relations occurred, the warlike tribes of the deserts soon learned the value of the merchant's cargo. Later, in Europe, it was the feudal baron and his hirelings who pillaged and in case of resistance assassinated the merchant. On sea, the pirate began his nefarious work at an early era, and it took centuries to exterminate him.

To meet such conditions the merchants resorted to mutual aid and protection. On land they formed caravans, and on sea convoys. The merchant of old united his forces with those of his fellow traders going in the same direction, and by combined strength created for himself that element of comparative security without which no intercourse, no commerce, were possible. Caravans became a regular means for conducting land trade; they developed into a carefully organized system. Those who wished to join a caravan assembled on a certain date, at an indicated spot. A leader was selected to whom all owed implicit obedience. In case of large caravans, a number of subordinate officers were appointed, each having a specific duty to perform; one attending to the proper handling and distribution of provisions, another regulating the arrangements for the halt, a third, familiar with the country to be traversed, acting as guide.

Increased security of the road, greater density of population, introduction of modern transportation facilities tended towards eliminating the caravan as a commercial

institution; at present it exists but in a few economically undeveloped countries. Thus the merchants of the northern shores of Africa continue to carry by means of caravan trade cheap manufactured articles of England, Germany and France across the Desert of Sahara to the people of Soudan and bring in return by the same means precious stones, pearls, ivory, gold, ostrich feathers and other native products. Thus, also, in connection with the musulman pilgrimages from Beirut and Damascus to Medina and Mecca, we have caravans which unite Asia Minor with the trading communities in Arabia. The magnificence and splendor which these caravans presented in the time of the Caliphs have largely disappeared, as the ostensibly religious aim of the pilgrimages has been overshadowed by commercialism. Now almost every pilgrim unites a mercantile adventure with the obedience to the Koran and he brings along with his religious zeal and enthusiasm cotton fabrics, hardware and other articles, which he knows will find a ready market in Arabia. In Persia most of the intercourse is also carried on by caravans. Having enumerated these few caravan routes and having perhaps omitted a number of less significant ones, we may leave the caravan, this venerable institution of former-day trade. All caravans are doomed to disappear; those yet existing unite some of the most densely populated districts of the Orient, and the wide-awake merchants of England and Germany, realizing the possibilities of these territories, have taken into their service the civil engineer and the surveyor. In many places where but a few years ago the camel reigned supreme, may now be heard the whistle of the river boat or the locomotive and the click of the telegraph.

For protection at sea the Phoenicians were the first to make use of convoys when their trading relations took them out into the Mediterranean, the Black and the Red seas, and into the Atlantic and Indian oceans. Rome

succeeded in suppressing sea-piracy, but with the fall of the Roman Empire it reappeared, and in the Middle Ages the danger of capture by pirates became so great that Venice forbade the maintenance of vessels by private individuals. The Venetian Government undertook the organization and management of public convoys which were loaned to the highest bidder. Convoys were maintained by Holland, England, the city of Hamburg, etc., as late as the seventeenth and the first half of the eighteenth century.

The use of convoys had many disadvantages: it placed restrictions upon the length of stay in harbors, amount and character of freight to be carried, place of departure and ultimate destination. Because of these disadvantages and the inability to subdue the pirates, peace treaties were concluded with them in the second half of the eighteenth century.

Modern shipping knows convoys only in times of war, when naval forces are occasionally used to protect the merchant marine plying between harbors within the zone of hostilities.

With the development of commercial relations it became necessary for the merchants not only to take wares from place to place but also to reside in foreign countries. The necessity for residence became especially urgent in the Middle Ages.

Mediaeval towns lived narrow clannish lives, shut off as they were from the outside world by many natural and artificial barriers. A stranger was regarded as a menace to long-established customs and beliefs, a danger to the economic and social stability of the place. The appearance of a foreigner often was a signal for hostile demonstrations. "Down with the intruder!" commanded the masters of guilds and their assistants who considered their interests jeopardized by the coming of the stranger. "Down with the foreigner!" echoed the apprentices and

the ignorant crowd offended at the sight of any one whose walk, dress and manner of speech were different from those to which they were accustomed.

The newcomers were aware of the harsh treatment in store for them; of the distrust and hatred of the native population; of the probability of uprisings during which they would be left to their own resources, the authorities being either unable or unwilling to interfere; they knew of the non-existence of a just, common law which made it certain that in case of dispute with a native their cause would be a lost cause. Knowing this they dwelt abroad in entrenched fortified settlements; these consisted of a single structure, of a group of warehouses, offices and residences in an enclosure, or of a whole section of a city. Such protected places of abode were known as factories. In these, merchants managed their own affairs and administered justice through their own officers, usually sent by the home government.

Factories obtained certain rights and privileges, such as the right to occupy a portion of a city, the right of self-government, the exemption from taxation and from the jurisdiction of local courts. These rights and privileges, including the somewhat doubtful privilege of being always on the alert, always ready to beat off mob attacks, were granted for pecuniary considerations; in some instances they were acquired by the force of arms.

At present, in civilized countries the institution of factories does not exist. German traders do not any longer maintain a fortified colony in the heart of London, nor do the English "Merchant Adventurers" have their fortified depots in Hamburg or Antwerp. Such an institution would neither be tolerated by the government of a civilized state, nor is its existence necessary.

If we wish to find a modern counterpart of an old factory, we must leave the beaten track of commerce and go to the barbaric or semi-barbaric countries of Africa, to

Guinea, to Senegal or Senegambia, where the merchants of today labor under the same difficulties which confronted their forerunners in the past; they live, as the others lived, in constant fear of attack by the natives and their only security lies in their own weapons.

To fully appreciate the position of the merchants of old we must not overlook the almost innumerable tolls to which they were subjected. Bridges were lacking where they were most needed, but many a dry level place could boast of a bridge built for the sole purpose of compelling people to go over it and to give passage money; river beds were not dredged, but ropes were stretched across the streams to force ships and barges to pay for the removal of obstructions. Those who were strong enough to exact tolls were limitless in their ingenuity.

Ostensibly most of the tolls were gathered in order to police the roads and to keep them in good repair; but in reality the merchants received nothing in return for the heavy burdens imposed upon them. Roads were always in a wretched condition, and the complicity of the feudal lords in the crimes of highway robbery excluded the possibility of any effective policing.

In addition to road tolls, every town levied duties on articles brought within its walls, and no trader could pass a town without paying these tolls.

Another hardship imposed upon the trader was the enforced display of goods, i. e., no matter to what place he was bound, all towns along his journey compelled him to offer his wares for sale to their inhabitants. The wants of the consumer were the first considered, which was natural enough, as the merchants were strangers.

Many regulations were passed so that the people might buy goods at low prices. If the delay in a town meant the impossibility to reach a destination, the ruin of merchandise, spoliation, so much the worse for the merchant.

Under such conditions the risks of mercantile ventures were enormous. There was no insurance, and the individual trader was the one who bore the losses.

The high cost of transportation—the result of the use of pack or draught animals on poor highways and the payment of innumerable and excessive tolls confined trading to goods of comparatively small bulk and great value, usually luxuries.

The slowness with which goods were transported and the lack of proper means for protecting them against atmospheric influences excluded perishable commodities while quackmires, ruts and pitfalls effectively checked the shipment of breakable wares.

Thus definite limitations—the result of natural and artificial conditions—were placed upon the commerce of the past.

II. EXISTING COMMERCE.

Steam and electricity have united the farthermost corners of the earth and have brought the trading communities of the world together. These powers which increased so marvelously the industrial efficiency of nations, which brought such a wonderful expansion of production, these dynamic agents revolutionized also the means of communication and transportation and made of the whole world one immense market.

The modern merchant is relieved of the technical management of transportation facilities; he intrusts his goods to a common carrier, to a railroad or to a steamship company, which transfers the commodities with such speed and safety as would, but a few decades ago, have been deemed impossible. The railroad and the steamer not only insure security and despatch but they, also, give regularity of service and punctuality of delivery; they permit transportation of great masses of goods at one time and shipment of bulky and ponderous wares. The smoothness

of the roadbed, the rapidity with which goods are handled at the terminals and moved overland and across the sea, the use of refrigerator cars and cold storage steamers have opened possibilities for the transportation of the most delicate and most easily perishable foodstuffs and thereby have created new economic activities in various parts of the world; they have also changed considerably our standards of living.

The merchant is no longer in doubt as to what it will cost him to bring goods from place to place; he knows the charges beforehand and can make his calculations accordingly.

The risks of the venture are insured. Insurance rates are moderate as the enforcement of law and order has almost eliminated dangers from the acts of men, and those from "the acts of God" have been minimized by a better knowledge of natural phenomena and by thorough equipment to meet adverse conditions.

The governments of civilized countries protect life and property. By means of legislative enactments, by police, by the administration of justice, the state affords security against brigandage and other wrong doing; without this security present-day commerce would be impossible. The state stands ready to enforce law, and those who conclude business contracts are certain that these contracts will be fulfilled even against the will of those who have concluded them in bad faith. On the other hand, business morals are much better than they ever have been; perhaps, because of the fact that modern business men have learned that in this age of rapid transmission of intelligence, honesty is really the best policy. However this may be, the majority of merchants have become trustworthy, both in their relations amongst themselves and in their dealings with customers. The maxim: "Let the buyer beware," has been buried. The best proofs of this are the modern methods of sales by means of sample, pattern, brand,

trade-mark or by simply designating a grade or standard quality; these methods are necessarily based on reliability.

Payments in many instances are deferred. Credit is willingly granted, partially because of an increased confidence of man in man, but to a very large extent because credit giving and credit taking have been placed on a much more rational basis. The credit giver can easily ascertain the resources and the character of the credit seeker. Mercantile agencies collect and disseminate data as to the financial standing of individuals and business firms. Most of the large houses have their credit departments managed by experienced credit men. A national association of credit men makes it possible to exchange views, compare experiences and discuss all matters of importance to its members.

The extension of credit either through deferred payments, just mentioned, or through the loan and debt credit, where modern banking facilities are made use of, has stimulated business activities and made possible an exchange of commodities reckoned in billions of dollars a year.

The magnitude of commerce and the impossibility for the unaided individual to deal successfully with its problems has led to the formation of various trade-promoting organizations, such as chambers of commerce and boards of trade, commercial museums, export banks, export syndicates and companies, etc.

Chambers of commerce are associations established by business men for the purpose of advancing local trade interests. They are especially influential in large mercantile centers, like London, New York, Hamburg, etc., where their main activity is directed towards developing foreign commerce.

Chambers of commerce are of two types: the French and the English. Those of the French type, which is predominant in France, in northern Germany, in Italy, in

Austria-Hungary and in a number of other European countries, are under strict governmental supervision. Their members are elected by and from the members of the business community where the chamber is established. Membership is limited; the Paris Chamber, the largest in France, has only thirty-six members, while in other French cities the number varies from nine to twenty-one. No new chamber of commerce can be organized without the approval of the Minister of Commerce. The chambers of commerce are supported by direct taxes levied upon business men, and their budgets are verified by the Government. The chambers have a number of administrative functions, such as supervision over commercial schools, over stock and produce exchanges, etc., and the Government consults them upon all matters of industry and commerce, their advice being carefully considered before the passage of laws or administrative regulations bearing upon the subject.

The chambers of commerce of the English type are voluntary, autonomous organizations with an unlimited number of members. They are supported by membership dues and are free from governmental control or supervision. They are doing very effective and valuable work for the interest of the localities where they are established, and those of the chambers which have sufficient influence and power, work for the good of the country at large. Great Britain and the United States have chambers of commerce of this latter type.

Frequently domestic chambers of commerce are established in foreign centers by merchants who reside abroad or have business relations there. Usually they are voluntary associations, although in some instances they receive financial aid from the home government. The American chambers of commerce in London, in Paris or in Berlin, the Italian chamber of commerce in San Francisco are examples of such institutions.

In many countries the chambers of commerce unite to form a national organization whose object is to acquaint itself with opinions on matters of general commercial importance, to crystallize these views and to present them to the Government in order to influence legislation. In the United States such an organization is known as the National Board of Trade. Somewhat similar in character and in functions is our Manufacturers' Association, which holds annual conventions and issues extended reports.

Many branches of industry and commerce have their own national associations of more or less importance; of this type in the United States are the National Association of Wool Manufacturers, the Bankers' Association, the Farmers' Alliance, etc.

Commercial museums are of comparatively recent origin. They are usually of a quasi-public character, being established and maintained either entirely by the municipal and state authorities or with their assistance.

Commercial museums are permanent exhibitions of samples of products from different parts of the world showing what each nation produces and thus what it can offer in the way of return trade. Samples are also collected with the object of showing the character of the products consumed in the different markets of the world. By looking over these collections the manufacturer and the merchant can obtain a more or less accurate idea of the competition to be met. Samples are arranged both geographically—by countries, and monographically—by products, and are supplemented by information as to origin, price, industrial value, the latter obtained by laboratory tests, etc., of each article displayed. Samples are kept up to date by frequent renewal, but the cost of collecting them and particularly of keeping them on display is so large that very few of the commercial museums have this feature of the work complete. Commercial museums have gradually added a number of other departments, less ex-

pensive to maintain, but just as valuable, which in many instances have become more important than the exhibits of samples. The Bureau of Information is the most valuable of these departments; it furnishes the merchant with data as to conditions surrounding the sale of goods in foreign markets; the information given bears upon the cost of reaching a market, the customs and usages of the place, the amount of duties to be paid, if any are levied, the names and standing of business houses, the best methods of packing in order to meet local conditions, etc.

One of the oldest commercial museums is that of Brussels; it was organized in 1880 and is placed under the direct supervision of the Ministry of Foreign Affairs.

The Philadelphia Commercial Museum in the United States is at present perhaps the largest and the best institution of its kind; it was established in 1894 and is kept up by municipal appropriations, by membership fees and by gifts; at the time of its organization it received also support from the State of Pennsylvania and from the Federal Government. Through its well-planned and systematic work the Philadelphia Commercial Museum has been of great value to American manufacturers and merchants who wished to secure foreign markets.

Commercial museums do not serve as media for the conclusion of business transactions; they are not interested in specific individual enterprises, neither at home, nor abroad, so that the information they give out is always disinterested, unbiased and as reliable as a careful, painstaking investigation can make it.

Export sample warehouses are a device by which a body of exporters aims to bring to the notice of foreign buyers goods they have for sale. These warehouses are located either at home or abroad and those who have charge of them usually act as intermediaries accepting orders and delivering goods.

Stuttgart was the first city to have an export sample warehouse and the first to establish branches of it in various parts of Germany and in foreign countries. Similar institutions have been organized since in different parts of the world.

A variation of warehouses are the so-called floating exhibitions, which aim to convey samples of a country's commercial products from one prospective market to another.

Export syndicates, an institution peculiar to Austria-Hungary, Italy and Germany, carry an import and export business for their members; these syndicates have agents in foreign countries who keep them informed as to the conditions of the markets, the financial standing of foreign buyers, the opportunities for trade, etc.

However important the various private and semi-public commercial associations and institutions may be, their sphere of influence is far more restricted than that of the state, and it is towards the National Government that the merchant looks to a very large degree for guidance and for assistance.

Nearly every department of the Government performs some valuable work for industry and commerce. In the United States we find that the legislative bodies, the House of Representatives and the Senate, have various standing committees whose duty it is to consider questions affecting the domestic and foreign trade of the country; such are, for instance, the committees on interstate and foreign commerce, on foreign relations, etc., of the House, or the committees on commerce, interoceanic canals, Cuban relations, etc., of the Senate.

In the executive branch of the Government the Department of State has a Bureau of Trade Relations and a Consular Bureau. The department negotiates treaties and is the custodian of those that are in force; it also issues

instructions to consular officers for reports to be printed by the Department of Commerce and Labor.

The consular service can be considered as one of the most important single agencies of the Federal Government established in the interests of foreign commerce.

Consuls are appointed by the President with the consent of the Senate; they reside abroad in those of the commercial and industrial centers where their presence is considered necessary for the benefit of our traders and export manufacturers. Consuls assist merchants by safeguarding and upholding their lawful interests; they supervise shipping by receiving the declarations of captains concerning damages sustained during voyages, by adjusting all matters of wrecks and salvage, by examining the papers of every ship which enters the harbor where they are stationed. The consuls certify the invoices of goods shipped to the United States, thus insuring a more correct declaration of values by exporters. They issue certificates of births, deaths, marriages and authenticate any documents of American citizens which need their official seal and signature.

The main activity of the consuls reaches far beyond these functions. Recently they have emerged from their position of mere supervisors and protectors and have become gatherers of information, advisors to importers and exporters and to the home government in matters pertaining to navigation, tariff, legislation, commercial conventions and treaties, etc. The consuls are requested to report, as promptly as the occasion demands, upon the economic and industrial conditions and changes in the districts assigned to them. The reports are published daily and are distributed to business firms and to the press.

The War Department has charge of the river and harbor improvements, of geographical explorations and surveys; it has control over the island possessions of the United States, (particularly the Philippines); it gathers sta-

tistics of insular commerce, summaries of which are published and distributed.

The Department of Agriculture besides benefiting commerce indirectly by aiding the agricultural interests of the country, aims to extend agricultural export trade through its Division of Foreign Markets.

The Department of the Treasury administers the tariff, regulates the entry of goods from foreign lands, entertains appeals against the collectors' assessment of duty upon baggage and tools of trade, looks into applications for the release of seized goods and for the remission of fines and penalties.

The Department of the Interior, through the upholding of the patent laws, encourages inventions; most of these have commercial value.

The Department of Commerce and Labor, the latest department organized by the National Government, has for its specific purpose, as the law which created it declares, "to foster, promote and develop the foreign and domestic commerce, the mining, manufacturing, shipping and fishery industries, the labor interests and the transportation facilities of the United States." Its Bureau of Statistics collects facts pertaining to the exports and imports of merchandise and specie, to the inward and outward movement of tonnage in our foreign trade, as well as the direction and the tonnage of our coastwise and lake shipping.

The Bureau of Manufacturers "fosters, promotes and develops the various industries of the United States and markets for the same at home and abroad, by gathering, compiling, publishing and supplying all available and useful information concerning such industries and such markets." The reports of the consuls are sent, through the Department of State, to this bureau.

Other bureaus of the department regulate and aid shipping. The Light-house Board maintains light-houses, beacons, fog signals and other safeguards to commerce on the

coasts and inland waterways. The Bureau of Navigation supervises the merchant marine, deciding all questions relating to registry, enrollment, licensing of vessels, their admeasurement, the collection and refund of tonnage taxes. The Steamboat Inspection Service looks after the condition of our steamers and thus contributes to the safety of both persons and capital engaged in business. The Coast and Geodetic Survey conducts investigations and publishes maps and charts of the coasts and harbors, tide tables, sailing directions, etc.

The Life-Saving Service, organized under the Department of the Treasury, patrols, through its brave and trustworthy employes, our coasts. Hundreds of wrecks are prevented, a great deal of property and thousands of lives saved through the heroic work of the life-station keepers and their able assistants.

Lack of space prevents a farther consideration of national means used for the purpose of aiding and promoting commerce. It may be said that our great machinery of state with its legislative, judicial and administrative branches is engaged mainly in solving commercial problems, that our political platforms, the messages of our presidents, the bills introduced into our Congresses deal mainly with such subjects as currency, banking, customs duties, the regulation of interstate commerce, the improvement of inland waterways, the piercing of canals, irrigation and drainage schemes for reclaiming arid or submerged land, the reorganization of the consular service, etc. Truly, it is no exaggeration to say that the governments of civilized countries have become great business undertakings whose time and energy is largely devoted to a study and direction of mercantile pursuits.

III. NATURAL CONDITIONS AS THEY AFFECT INDUSTRY AND COMMERCE.

Both the domestic and the foreign trade of a country depend upon its industrial development. Agriculture, mining, forestry, fishing and manufacturing are the basis of our mercantile activities, and they are all more or less influenced by natural conditions, by physical phenomena.

The farther we advance in civilization the more capable we become of being masters of our destinies; by artificial irrigation we make garden spots of deserts and we gather cereals, oranges and grapes where preceding generations contended unsuccessfully with shifting sands and sagebrush; by boring tunnels and bridging torrents we reach places of isolation and convert them into regions which invite the white man's labor and ingenuity; by instilling the virility, energy and resourcefulness of the temperate zone workman into tropical lands we break the enchantment of enervating influences, by which nature has held in somnolence and ignorance the aboriginal inhabitants; by planting the eucalyptus tree in insanitary localities we make them healthful and habitable, and by resorting to dry farming we open to cultivation millions of acres of arid land.

But whatever our achievements may be, we necessarily move within certain limits fixed by nature; these limits may be elastic, but they are limits nevertheless, and most of our successes have been won not because we have "overcome" nature, but because of the fact, that we have a greater insight into her mysterious workings and are now able to turn to our advantage many of her treasures heretofore hidden and to profitably employ many of her forces.

Climate is one of the most important natural factors which affect production. By climate of a country we un-

derstand its average atmospheric condition with regard to temperature and moisture. This condition manifests itself in the successive changes from season to season and from year to year.

Temperature is primarily influenced by latitude or position with reference to the equator, to that part of the earth where the greatest number of sun-rays fall upon a given space and therefore produce the greatest amount of heat. All other things being equal, the nearer a country is to the equator, the hotter its climate.

The world has been divided climatically into three regions, lying to the north and to the south of the equator, and known as tropical, temperate and polar regions. A more minute classification divides the zones into: equatorial, tropical, sub-tropical, warm temperate, cold temperate, sub-arctic, arctic and polar.

Although temperature, generally speaking, decreases as we proceed from the equator towards the poles, this decrease does not conform, as might be expected, to parallels of latitude. Halifax, in Nova Scotia, in the 44½° N., is nearly always open to navigation, while Vladivostok, on the eastern coast of Siberia, in the 43° N. is icebound for more than four months in the year. New York, situated in the same latitude as Naples has colder winters than Berlin, which is located more than ten degrees nearer to the pole. The semi-tropical orange may be grown in the northwest of Italy to the 44°, while in the east of the United States, it can not be cultivated higher than the 31° N.

In order to judge of the climatic possibilities of a locality for the raising of crops, a knowledge of the mean yearly temperature is not sufficient. Torrid scorching summers alternating with rigorous winters may make the yearly average in one place equal to that in another possessing a mild equable climate all the year round; but what a difference from the point of view of industry and

commerce between the two localities! There are greater contrasts between summer and winter in eastern Asia than in the east of America, while western Europe is characterized by a more even and a somewhat warmer climate than the western parts of the American continents. These differences have a marked effect upon agricultural and other industrial pursuits in the above-named territories.

Climatic Belts.

Tropical regions, because of the excessive amount of heat and moisture which characterizes the greater part of them, are regions of luxuriant vegetation, of jungles and forests with trees of enormous size and thickets of twining and climbing plants so dense that they are almost impenetrable to man. A tremendous expenditure of energy and labor is required to keep the ground clear and fit for cultivation. If neglected for a short time the soil becomes covered with new growths just as thick, vigorous and exuberant as those removed. Where this obstacle to industry and commerce does not exist, there is another, more formidable one, the desert. The largest deserts of the world, where only an occasional oasis relieves the monotony of sterility, are in the tropics.

The soil's fertility is in the main dependent upon rainfall. The ocean is our source of moisture, and while it is true that the greatest amount of humidity is sucked up by the hot air of the tropics from the tropical sea, and distributed as rain, it is also true that where mountains occur to cut off the ocean moisture from the interior, as is the case in many parts of Australia, Africa and Asia, or where the prevailing wind drives the vapors away from land, as in some coastal regions of America and Africa, a permanent drought and a desert is the result.

However, the larger part of the tropics, because of the high and more or less uniform temperature throughout the year and because of a generally large amount of

moisture, yield various products which it is either difficult or impossible to raise outside of them, and they yield these products with a fabulous abundance; trees bear fruit all the year round, and one crop of vegetation succeeds another almost as fast as it can be gathered.

The complex life of the civilized man is to a very large extent dependent upon tropical and sub-tropical products. It is only necessary to look over the import list of the United States, England, or Germany, in order to realize the significance of that vast territory which stretches north and south of the equator and, passing the tropics of Cancer and of Capricorn, gradually merges into the so-called temperate zone.

The United States imports tropical and sub-tropical goods to the value of over $500,000,000 a year; these goods include bark for quinine, as well as other drugs, cabinet woods, cocoa, coffee, cork, dyewoods and extracts, fibers, fruits and nuts, gums, indigo, ivory, rice, rubber, sago, tapioca, spices, sugar, tea, vanilla beans, vegetable oils, etc.

The need for tropical wares, while not as intense in the past, as it is now, has always been felt. European nations, since the inception of their commerce, sought the trade of the tropical Orient. They established the Mediterranean route to the coasts of Syria and Egypt, and thence to the Euphrates and the Persian Gulf; they crossed the highlands of the Caucasus and Central Asia, and sent their ships through the Bosphorus to Trebizond and Batoum on the Black Sea. When all these routes were cut off by the victorious Turks and the Atlantic became the only way they embarked in their frail vessels upon a series of perilous journeys in order to find an ocean route to the land of the equatorial sun; and when the ocean route was discovered, we may realize how important it was considered from the many wars which were fought for its control.

At present the routes are open to all, but the tropics themselves have become to a very large extent posses-

sions of the various commercial nations of the world. Knowing the great wealth which these regions are capable of yielding, England, France, Germany and other countries have taken possession of tropical territory, wherever they have been able to do so, and today the white races are expending in the tropics much money, energy and skill.

A serious obstacle to the development of such regions is the indolence of the natives. The magnitude of this hindrance may be imagined, when one reflects that about one-third of the world's population live in tropical colonies. The wants of the natives are few, and these are easily satisfied; there is little incentive for exertion; banana and cocoanut grow wild; other staple foods yield quickly and with little effort. On the other hand, the moist heat is so enervating that continuous labor is very irksome.

Many devices have been used in order to inculcate habits of energy and thrift into the aboriginal inhabitants of the torrid zone. These began with the whip of the slave driver and assumed various forms (culture, system, etc.) until the white man learned that his object could be better attained without cruelty, and therefore more human methods are now used. We try to benefit the native physically, mentally and morally, we raise his standard of living and educate him, we cause him to have new needs and wants, and we teach him how he can satisfy these by means of application and persistent labor.

We surround the native with the railway, the telegraph and the telephone, with dams and ditches, we place steamers on his rivers, build piers and warehouses on his harbor sites, we open banks, offices and stores in his settlements, and by means of this peaceful penetration into his territory, we gradually enter into his mind and his heart. This work is not easy, but when once accomplished it is much more effective and certainly much more in keeping with our modern ideas of mercy and justice than the atrocious

methods which have been used heretofore and which unfortunately are yet used in some localities.

The polar regions are the least important from a commercial point of view. Their frigid portions are buried under snow and ice for the greater part of the year; during the short summer months when the soil thaws from ten to fifteen inches, mosses, lichens and a few flowers of brilliant hues but of no economic value make their appearance.

The fish in the lakes and rivers and the fur-covered animals on land sustain the life of the natives, but it requires the severest exertion to procure the most necessary food, clothing and shelter. The struggle for this bare existence consumes the strength and energy of the aborigines so that they are not able to lift themselves above the level of sturdy hunters and fishermen wandering from place to place in search of food and erecting primitive huts out of ice, snow or skins.

It was the search for furs which first attracted the temperate region trader into the bleak valleys and plains inhabited by the Esquimaux and the Indian. The Hudson Bay Company, one of the most important mercantile undertakings of the seventeenth and eighteenth centuries, derived its enormous profits from the sale of the skins of the polar bear, the fox and other arctic animals.

Recently rich mineral deposits have been discovered in many parts of the polar zone, notably in Alaska; these discoveries attract people who under ordinary circumstances would not venture to go where life is so full of denials and hardships.

The temperate zone lies between the two climatic extremes just described and it offers the best opportunities for the modern man to live comfortably and to pursue his career successfully. The succession of seasons, with snow and frost in winter when the vegetation is dormant and with warmth in spring and summer when the growing, ma-

turing grains and plants cover the ground, have taught men the value of foresight and saving; it taught them the necessity for sowing in spring, so as to be able to reap in autumn and thus provide for the long winter months.

The refusal of the soil to yield abundantly unless cultivated, and the readiness with which it responds to cultivation gives impetus to activity, while the climatic conditions are such as to make work more agreeable than in either the tropics or in the polar regions. In fact, the temperate zone climates, barring some localities and certain periods of the year, are such as to stimulate man to exertion.

In the temperate regions we find highly developed manufacturing industries, concentrated in mammoth establishments where steam and electricity applied to modern machinery has increased a thousand fold the productive efficiency of man; we find agriculture based upon the knowledge of the properties of soil and the methods of improving its fertility; we find the most diversified industrial pursuits, all interdependent and all tending towards the production of material prosperity, a necessary basis for the thriving of science and arts; we find gigantic, far-reaching business combinations; we find commerce giving its broadening cosmopolitan cachet to every activity, lifting the nations of the world to a better, more enlightened attitude towards each other, uniting the North and the South, the East and the West and showing that we are all "of the same blood."

The climate of the belts is by no means uniform throughout their territory, and in each region there are many exceptions to the usual conditions of the zone.

The following are the chief causes which act as modifiers of climate:

Altitude.—Climate becomes cooler with increased height above sea level, temperature decreasing about 1° Fahr., for every one hundred feet of elevation.

On the high plateaus and mountain slopes of equatorial Africa and South America we may find the atmospheric conditions of our temperate belt, while the summits of their mountains rising above 15,000 feet are covered with perpetual ice and snow.

It was the existence of a high and comparatively cool plateau which permitted the Dutch Boers to penetrate into South Central Africa. They, and then the English, traversed about a thousand miles by land and seized and colonized a tropical country that lies within but 70 or 80 miles of the ocean behind the Portuguese settlements in the east. The Portuguese, although so near, were not able to penetrate inland, because they were surrounded by tropical swamps and could do no more than keep within the reach of the ocean.

Relation of Land and Sea Masses.—Proximity to the sea has an equalizing effect upon temperature. Water heats and cools more slowly than land, and therefore territories near the seacoast are subject to fewer and less sudden changes, both between day and night and between summer and winter, than more continental land masses. The central parts of the eastern hemisphere are colder and present greater extremes of heat and cold than the central parts of the western, the eastern hemisphere being a broader and a greater land mass than the western and thus having its center farther removed from the sea.

The surface waters of the ocean circulate, the heated water of the equatorial zone flowing toward the polar regions and the cold water of the polar oceans moving toward the equator. In some parts of the ocean these movements are sufficiently continuous to constitute the so-called currents; these currents as they pass near the coasts influence the temperature of the land. The climate of the United Kingdom is much warmer than that of the Atlantic Coast territory in Canada, because the British Isles lie on

the way of the warm Gulf stream while the shores of Canada are passed by the Labrador Ice Current.

Direction of the Winds and Position of the Mountain Ranges.—Winds exercise a paramount climatic influence as carriers of heat and moisture. They bring the warm air of low latitudes to the colder regions of higher and vice versa, their main and most regular course arising from the difference of temperature at the poles and the equator.

The air above large bodies of water is saturated with moisture; this is particularly true of the air in tropical regions, as the warmer the air the more moisture it can absorb and hold. The winds which blow from the equator are therefore not only warm but also moisture laden. On their way northward and southward (because of the rotation of the earth the direction is not exactly north and south), they gradually cool off; in this cooling process the vapor condenses into water and yields rain or snow.

When an air current meets a mountain range it is deflected upwards and thus strikes a cooler atmosphere; the condensing process takes place immediately and a heavy rainfall on the windward side of the mountains is the result. The wind which blows over the summits is dry, and the regions which lie on the other side of the mountain chains are therefore subject to droughts.

One of the advantages which the new world possesses over the old is in the direction of its mountain ranges. They extend north and south, most of them being on the western borders of the North and South American continents, thus presenting no barrier to the free passage of the moist winds from the equator. In Asia, Africa and Australia most of the mountains extend east and west; because of this, these continents have many large regions which are either entirely sterile or lack a sufficient amount of rainfall needed for agricultural pursuits.

Forests.—The effects of forests on physical conditions of a country are very great, although it is well to guard against unsubstantiated assertions and indiscriminate arguments relative to their far-reaching influence upon climate. Some go so far as to confuse cause and effect, they attribute the great amount of rainfall over the forest regions to the presence of trees, and not the existence of trees to the amount of rainfall and they ascribe every drought that sweeps over a country not to the great cosmic influences, but to forest destruction.

The most immediately recognizable action of forests is that upon the amount of moisture in their immediate vicinity; this is not because forests produce rain, but because they regulate the movement of rain water. Leaves, branches and trunks retain some of this water and evaporate it, and the rain which passes through the growing vegetation and falls on the ground meets a thick mass of decayed leaves, twigs and trunks. As it gradually penetrates into the soil and the subsoil, the roots of trees draw some of it back upward; they then pass it through their trunks and branches to the leaves, returning it into the air in the form of vapor. Thus the forest checks a too rapid evaporation of water and preserves—even in dry weather—humid air and cool atmosphere.

The more uniform climatic conditions of the forest prevail in its neighborhood, but the extent of this equalizing influence depends upon the species of trees the forest is composed of; narrow-leaved pines and firs have the least effect, broad-leaved trees with dense foliage, like beeches, the greatest; the location of the forest with reference to winds is also of prime importance in this connection.

The effect of the forest on soil is a well-established fact; the forest cover protects the soil from the disintegrating action of the atmosphere; the forest maintains stable conditions on mountain slopes by preventing ero-

sions and wash-outs and the blowing of shifting sands down into the valleys.

More important from a national point of view than the above-mentioned influences of the forest is its effect upon the flow of streams and rivers. It has been computed that the direct yearly damage by floods in the United States has increased steadily since 1900 from $45,000,000 to $238,-000,000, and the indirect loss is much greater than these figures indicate. It is more than a significant coincidence that the number and the violence of our floods grow with the increased activity of the sawman and the axman in the woods surrounding the head waters of our streams.

Not every deforestation brings flood, and not every flood can be prevented by a forest, however great and noble this forest may be; but it cannot be denied that many of our woods which have been so ruthlessly destroyed, acted as flood checks by distributing more evenly and over a larger period of time the run-off of rain and snow water which supplied our springs and brooks; this gave the rivers a more steadfast flow; the incalculable value of the latter cannot be overestimated. The speeding freshet, the river risen above its banks, in addition to producing the horrors and losses of destructive inundation tear away and carry down to the sea soil matter, upon which depends the well being and the prosperity of our farming population. It has been estimated that the loss to upland farms through soil erosion produced by freshets equals 500,000,000 a year. The soil matter, stones and other debris accumulate at the mouths, in the lower courses of rivers and in harbors; this necessitates heavy expenditures for dredging, channel cutting, bar-building. When the dry summer sets in, the torrents subside, the springs and brooks dry out and the river with its supply of water cut off, rapidly falls into its deeper channels and becomes unnavigable.

Soil.—Plants can not thrive unless the nature of the soil is favorable to their growth. Large crops can be pro-

duced only on rich soils, soils containing a large store of plant food, of nitrogen, phosphorus, etc.

Soils differ from one another physically and chemically.

The physical dissimilarity depends upon the condition of the particles. They may be coarse or fine, porous or compact and tenacious. Other things being equal, fine soils are more fertile, that is, they supply food more plentifully to the vegetation living upon them than coarse soils. Porous soils are light and easily worked by the plow or the spade; they permit the sinking of rain deep into them and the rise of moisture from below to the surface (by capillarity); these qualities make porous soils advantageous to some plants, coffee in Brazil, and disadvantageous to others, particularly those which require the retention of a great deal of moisture around their roots. Porous soils are usually dry and warm, while compact soils (clays) are wet and cold.

Soils differ in their chemical composition with regard to those substances which are made use of by plants as food. These substances, besides nitrogen and phosphorus, are potassium, magnesium, sulphur, iron and calcium. Water dissolves them, and when they are dissolved they are absorbed by the roots of the plants. This absorption leads to soil exhaustion, unless something is done to restore the mineral matter.

The conservation of soil fertility is one of the greatest problems confronting all nations. Most important methods used for the purpose of solving it are: (1) the rotation of crops and (2) the use of fertilizers, either natural—farm manure, or artificial—phosphate rocks, bone ash, cotton seed refuse, seaweed, guano, etc.

IV. LOCALIZATION OF INDUSTRIES.

Industries are established in places where they can be profitably carried on. The most important economic advantages leading to localization are: favorable climate,

presence and accessibility of natural supplies, nearness to the sources of raw materials, nearness to fuel, proximity to water, accessibility to markets, supply of labor, supply of capital, characteristics of people, the early inception of an industry.

Favorable Climate.

The most evident influence of the climate is that which it exercises upon commodities derived from the vegetable kingdom. The successful growth of these commodities is dependent upon certain climatic conditions, upon a certain degree of temperature and a certain amount of rainfall at different seasons of the year. Most animals obtain their sustenance from vegetation; in addition to this they are very sensitive to heat and cold; climate therefore affects both directly and indirectly animal life. Now, since most of the industries which supply us with food, clothing and shelter derive their raw materials from either the vegetable or animal kingdoms, we can readily understand the effect which climate has upon the localization of some of the most valuable industrial activities.

Climate affects, not only the location of agriculture in its various forms (raising of grains, horticulture, viticulture, stock raising, dairying, etc.), but, also, the location of a number of manufacturing industries.

The spinning of the finest cotton yarns has been made possible in Lancashire, England, because of the extremely moist atmosphere there. Germany and other countries have made many attempts to compete with the superior cotton fabrics of Lancashire, but these attempts thus far have been failures because of the lack of suitable climatic conditions in the localities where the competing mills and factories were established.

The commercial result of this superiority of Lancashire has been the movement of raw cotton from cotton-produc-

ing regions in the United States, in India, and in Egypt to Great Britain and the shipment by England of finished cotton goods to various parts of the world, where the well-to-do demand a fine grade of goods. The tobacco industry is another illustration of the effects of climate upon localization of production and of manufactures. The making of good cigars and of high-grade cigarettes requires a dry climate; on the other hand, the tobacco leaf needs for its successful growth a great deal of humidity; therefore tobacco leaves are sometimes moved long distances from the places where they are grown to the manufacturing establishments.

There is another very important climatic effect which must not be overlooked, the effect upon the workman. Where climatic conditions are favorable, where the winters are not too cold, or the summers too hot, the laborer is capable of working more efficiently, and of thus producing better results.

Extractive industries, like mining, quarrying, or industries which obtain supplies from nature, like fishing, lumbering, fur and sponge collecting, are necessarily limited in their localization by the presence and accessibility of natural supplies. It is true that men stock rivers with fish, and plant trees, but their efforts are insignificant when compared with the work of nature, and all our ingenuity and resourcefulness have not as yet enabled us to create a coal mine or a marble quarry.

Nearness to the sources of raw materials determines the location of a number of manufacturing industries. Flour mills generally center in wheat districts, distilleries in corn-producing regions; the making of wine is carried on near vineyards and the canning of fruits and vegetables near orchards and vegetable gardens. The wood-pulp paper industry is established near spruce and poplar forests; the pottery industry near clay beds; slaughtering and meat packing in stock-raising localities.

The reasons for the establishment of manufactures close to the raw materials are, first, the saving on freight charges which bear more heavily upon bulky raw products than upon finished commodities; second, perishability of certain classes of goods: fruits, vegetables, milk, fish, etc. Refrigerator cars overcome to a certain extent this latter difficulty, but refrigerator transportation is expensive.

Nearness to fuel is another important consideration. Glass manufacturing is established near the sources of natural gas (in Indiana, Ohio), because it requires large quantities of pure fuel. Pennsylvania leads in iron and steel production because of the beds of coal existing there.

Proximity to Water Power.

Many manufacturing plants are influenced in choice of locality by proximity to water; such industries as make use of heavy machinery (flour milling, log sawing and planing), utilize running streams for power. The most modern use of water as a motive power is for the generation of electricity.

Accessibility to Markets.

Service and repair works must be situated in immediate neighborhood of their customers. The locksmith and the plumber, the physician and the lawyer are of comparatively little value unless they are on the spot. But service and repair industries are not the only ones that follow the consumers. Nearly 48 per cent of the manufacturing of the United States is centered in six states: Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Pennsylvania. This concentration was caused mainly by the fact that when the manufacturing development of the country began, the bulk of our population lived in these states and thus offered the largest market for the sale of finished products. The influence of the market may be seen in the steady westward

movement of our center of manufactures; in a general way manufactures follow the movement of the consuming population. However, the westward movement of manufactures in the United States may be explained by other facts than the movement of the markets. It is self-evident that the American people do not go westward in the capacity of consumers alone; they move as producers, and productive industries necessarily follow them.

Nearness to raw materials and proximity to markets must not be taken too literally. Good means of communication and transportation shorten distances and thus they play an important role in localizing industries in response to other factors besides geographic proximity, such as presence of skilled labor, accumulated capital, etc.

The supply of labor is a very important factor. Labor cannot be moved from place to place as easily as a bale of cotton or a barrel of sugar, and industries are not established with the expectation that labor will come when it is needed.

The matter of labor supply must be studied very carefully before enterprises are launched. Improved transportation facilities tend to make labor more mobile than it was in former times.

Capital, which is needed for most of our enterprises, is available wherever there are chances of secure and profitable investment. However, a study of actual conditions shows that capital is not as movable as many of the theoretical economists consider it. "It is almost as important," says Mr. Hall in the XII Census, "to have a supply of local capital as it is to have a supply of local labor. Although most large enterprises are now financed from the great financial centers, the plants are located usually in places which have already become industrial centers through the efforts of the people there and by means of their money."

Localities which have proved their worth by the accumulation and the manipulation of local capital attract out-

side investments more readily than untried places. The Report of the Industrial Commission cites as one of the causes for the establishment of cotton manufactures in New Bedford, a successful fishing port, the supply of local capital set free by the decline in the whaling industry. The necessary local supply of labor came from the surplus population on the New England farms.

Characteristics of People.

The pre-eminent position held by France in the production of articles of taste and of beauty can be explained by the presence of artistic ability in the French nation developed through centuries of effort and of achievement in this direction. The painstaking, conscientiously attentive to details, Germans lead in the production of such things as require careful attention to details (chemicals, dyes, etc.).

The early inception of an industry gives an unquestionable advantage to the locality where the particular industry has been established. The continued pursuance of any kind of work develops in the people technical knowledge and skill, which helps materially in competition with other localities.

Irregular and heavy taxation acts as a disturbing element, in many instances as an effective hindrance, or a barrier to industrial development.

Legislative enactments, i. e., protective tariffs, bounties, etc., are often used for the purpose of creating and encouraging certain branches of industry. Govermental aid has been invoked and successfully applied, especially in the case of manufactures whose rise in a country may have been prevented by artificial (historic) causes. A country may be possessed of undeveloped resources, its people may have latent qualities of character and temperament making them fit for the greatest achievements in certain lines of industrial endeavor, yet neither the one, nor the other

may have had opportunities for development. Political or religious dissensions, as was the case in Germany and is yet the case in Austria-Hungary, subjugation to a foreign power—Russia under the Tartar rule—may have acted as checks upon industrial progress. When these conditions are removed, a country may find itself confronted by formidable, fully developed economic rivals. For the purpose of protecting its newly created industries against powerful foreign competition the Government imposes customs duties or grants subsidies and bounties. Thus aided and protected the industries may grow, and if there are no natural and permanent causes preventing their successful pursuit, they may soon become capable of holding their own at home and of competing abroad.

V. COMMERCIAL ROUTES.

The influence of commercial routes uniting the nations of the world and bringing the products of one within easy reach of another may be seen at each stage of our daily existence, in the food we eat, in the material and cut of our clothing, in the furnishings of our homes and our public buildings, in our thoughts and actions when we are at work, and in our recreations when we are at play.

Great changes have taken place within the last few decades in the social and economic life of the world. It has been customary to explain these changes by referring to the application of physical, mechanical and chemical discoveries upon industrial arts. However, this explanation is hardly sufficient as it begets a perplexing question: why have industrial laborers who for centuries fought innovations, who attacked and stoned the inventors and destroyed their creations, why have they changed their attitude towards research laboratories and mechanical shops, why have they adopted steam and electrically driven motors and all labor-saving machinery and devices.

If we attempt to answer this question, we must come to the conclusion that the modern technique of production has been brought about by some extraneous revolutionizing influence. It was the application of modern scientific inventions upon means of locomotion which made impossible the retention of old methods of production; it was the commercial route traversed by the locomotive, the steamer and the electric flash which destroyed the long honored shoemaker's bench and his primitive tools for making shoes and which substituted for small shops and house industry large centrally located establishments from which great masses of products are yearly distributed to every nook and corner of the globe.

The sensitiveness of modern business, a demand for goods in one locality makes the whole world vibrate with the news of it; the despatch with which wares are shipped from place to place at short notice, and the small cost of transportation have compelled people to inventiveness, activity, eagerness to adopt every new mechanism which permits them to meet competition and perhaps to reach out for their share in the world's trade and the profits it brings.

The network of commercial routes which cross and recross the world in many directions and which are so capably managed and used by modern commerce produced many notable results. A line of transportation "makes the whole world kin." The possibility to display tropical fruits in the shops of New York and Boston in the midst of severe winter weather and to sell them advantageously has awakened from legarthy many districts in Porto Rico, Cuba, Jamaica and other West Indian Islands, and the introduction to the most remote corners of the earth of ready-made garments, tinned meats and canned fruits and vegetables, of kerosene and various utility articles has transformed the lives of millions.

Our commerce has taken on some remarkable aspects. The shipping of coals to Newcastle is today a reality which has assumed many extraordinary forms. The improved commercial route permitted the shipment of sauerkraut from Chicago to Hamburg, of "Rhinewine" from California to Germany, of potatoes from Maine to Ireland, of cutlery from Pittsburg to Sheffield and of cotton goods from New England to Manchester. The improved route led also to the migration of thousands of Slavs from the agricultural communities of Russia and Austria-Hungary to the slaughtering and meat-packing establishments and to the steel mills of Chicago and has helped to rear our modern cities with their slums, poverty, squalor and degradation on one hand, and splendor, luxury and achievements on the other.

Another important result of improved means of transportation was the settlement of new countries, possessing virgin soil and abundant mineral resources. These countries, by means of steamers, were connected with each other and with the old world. It was this that made it possible for the densely populated districts of northwestern Europe to become great manufacturing centers, drawing a large part of their food supplies and raw materials from America, Asia, Africa and Australia, and exporting manufactured products in exchange. It led to specialization in the industrial world, with all the benefits which accrue from such a specialization adapted to natural conditions and to historic influences.

Modern commercial routes of national and international significance are either railways or waterways.

Public Highways.

Public highways are of enormous value for local traffic and as feeders of railways; because of this their improvement cannot be urged too strongly; but for long distance transportation they do not meet our present requirements

of speed, safety and cheapness, and they are therefore used only in exceptional cases, where no other facilities exist.

Common highways are comparatively inefficient because of the great amount of friction between the road and the vehicle, and everything that tends toward eliminating this is of vast commercial value. The greater the friction, the more difficult is the advantageous use of large vehicles and of mechanical motors.

According to some computations (it is difficult to arrive at exact estimates), if we consider the amount of friction on the canal as 1, it equals 5 on a railway, 33 on a macadamized road and 80 on an ordinary highway. The respective efficiency of various roadbeds would perhaps be made clearer, if we realize that if one horse can pull a given load on iron rails, it will be able to move about one-half of the same load on asphalt pavement, one-seventh of it upon good cobble stone, one-twentieth upon an earth road and one-fortieth upon sand. The figures show not only the superiority of waterways and railways over common highways, but also the comparative efficiency of the various kinds of highways.

Most of the ordinary wagon roads in the United States have been neglected. Our vast stretches of sparsely populated territory needed the service of railways; and railways were therefore built with a rapidity unknown in any other part of the world; but we must not overlook the fact, which is each day brought home to us with greater force, that our commerce and general intercourse are dependent upon public roads, that neither the railway, nor the waterway can replace them in their many important functions; that almost every commodity at some period of its commercial existence is conveyed over a public highway (from, to or at the terminals) and that the cost of such transportation bears heavily upon the price of goods. It has been estimated that the bad roads in the United States cost

the people about $500,000,000 a year; the estimate cannot be substantiated by definite data, but it certainly is very suggestive. It costs less to transport commodities from New York to San Francisco or from Melbourne to London, than it does at some seasons to move them a few miles over many of our common roads.

Good roads would be of incalculable value to our farmers by giving them a greater period of time for the marketing of crops and by increasing the number of market places which they could reach; they would help the population of our towns and cities by enabling them to buy farm products more cheaply than they do now. Existing road conditions compel farmers to market their products at certain times of the year, and all products at the same time. The overstocking of the city market forces the price down to the detriment of the farmer, but without benefiting the final consumer. The produce is bought up by commission merchants and speculators in general, and after this is done the price is raised. Good roads would aid in changing all this, as well as in improving the character of farming in many of our rural communities; they would permit the planting of flowers and vegetables, the raising of poultry, etc., in localities which with present conditions of transportation are unable to market perishable goods. They would permit the country merchant to replenish his stores as the occasion demands instead of filling his warerooms with merchandise in anticipation of bad weather, thus immobilizing his capital, stretching his credit and compelling his customers to use stale goods.

Good roads would benefit railways by freeing them from unnecessary spasmodic transportation; at present, notwithstanding the fact that railways are spending large sums of money on their rolling stock, they are at times unable to handle the freight, while at other times a large part of their equipment is idle because no produce can be brought to or from the stations.

When we come to consider the work of improving wagon roads the problem confronting us is: what shall be the character of the improvements? Those technically best are not always the most desirable economically. A steel bridge is a vast improvement over a wooden trestle, and many magnificent steel bridges stand as monuments to the technical skill and to the business acumen of our age, but who would advise constructing a steel bridge over a wide river in order to connect two small village communities lying outside the regular transcontinental traffic? We spend large sums of money to lay asphalt pavements in the residential districts of our prosperous cities, but a macadamized road is all we need and can hope for in rural communities. It is true that to some extent roads create traffic, but this additional traffic can be taken into consideration at the time of making improvements; we can estimate it more or less accurately if we know the geographical position of the place, its resources, the density of its population and the character of the people.

The initial cost of constructing a common wagon road is small as compared with the expense of building a railway or a canal, but the cost of maintenance is comparatively high, and a poorly built road in case of heavy traffic, for which it is not adapted, is a continuous source of outlay for repairs.

Railroads and Inland Waterways.

Steam and electric railroads represent the highest types of land transportation. The part railroads have played in the economic development of the United States and in other countries is too well known to need here anything more than general mention.

The United States possesses over 230,000 miles of railroads, which is more than the combined railway mileage of all Europe. In 1908, the American railways carried close to 2,000,000,000 tons of freight and about 900,000,000

passengers. In 1889 the amount of freight carried was 540,000,000 tons and the number of passengers was 472,000,000. The amount of freight carried in Great Britain and Ireland was 297,000,000 tons in 1889, and 444,000,000 tons in 1903; the number of passengers 775,000,000 in 1889, and 1,195,000,000 in 1903. Our steam railroads carry fewer passengers than those of England because our electric traction trolley lines are more developed.

Products of mines represent approximately over 50 per cent of our total freight tonnage, with manufactures as a poor second (about 13 per cent), closely followed by the products of forests and of agriculture.

Regularity, punctuality and speed are the main characteristics of railway transportation, characteristics essential for the movement of passengers, mail and express matter, perishable goods and all objects which require despatch and are able to pay for a quick service. Our railroads also carry exceptionally large masses of very heavy and bulky commodities which frequently overtax their carrying capacity. Such transportation of heavy and bulky goods has disadvantages for both the shippers and the railroads. Railroads must charge for this kind of service very low rates, often out of proportion with their efficiency, otherwise the freight will not be moved at all, not being able to stand high transportation charges; but however low the price, it is usually too high for the shipper, whose cement, coal or iron ore could be moved by means of shallow inland waterways and barge canals just as well as by railways and at a much lower cost.

Until recently most of the rivers in the United States have been neglected. Our Government appropriates annually, under the River and Harbor Bill, money for the work of dredging river channels and constructing dams and locks, so as to facilitate shipping; but the sums raised have been comparatively small, and a lack of interest in inland waterways was manifested through the second half of the

nineteenth century both by public authorities and by the people.

At the beginning of the railroad era it seemed for a time as though railways would be able to take care of all land traffic.

The possibility of reaching a desired point and of reaching it directly, without being compelled to follow a tortuous river course, of overcoming almost any obstacle in the configuration of land, of linking different lines together and thus forming a network of uniform transportation facilities over which cargoes can be moved without the necessity of reloading until they arrive at their place of destination, are some of the advantages of railways. To these advantages may be added the possibility of using railways throughout the entire year, at night as well as in the day time, in summer as well as in winter.

A heavy snow storm may stop the traffic for a short time, but tracks are quickly cleared and trains are rushed on, through tunnels, over bridges spanning ice-bound rivers, rapids and streams, from the bottoms of valleys to the summits of mountains, passing fields, orchards and deserts, mining camps and factory sites, hamlets, villages, and cities, stopping here and there and speeding on again, bringing passengers and freight across continents.

If to the fascinating romance of railways, we add the large profits which they yield, we can easily understand why they not only attracted public attention and absorbed the technical ability of the world, but why they also commanded the purse of the capitalist, and why, with their coming, the river and the canal were relegated to a second place. But the steel rail and the locomotive gave such an impetus to industry and commerce, opened to the toil of man so many fields of activity, in such widely scattered localities that they are no longer able to cope with the resultant traffic, notwithstanding they endeavor to meet the requirements of an ever-increasing commerce. Less than

25 years ago the average capacity of our freight cars was 10 tons, and the capacity of locomotives was 20 to 30 of such cars to the train. At present we have cars holding up to 50 tons and locomotives drawing from 80 to 90 of such cars loaded to their full capacity. But for their own good and for the good of the country, railways must be relieved of a certain part of this traffic.

In Europe this has been understood earlier than in the United States, and the river and the barge canal play there an important role in land transportation.

It is true that inland waterways may to some extent act as competitors of railways; they may keep the freight rates down, but water competition is not so dangerous as the early railway promoters and operators pictured it to themselves. High-grade traffic seeks the railway and is both capable and willing to pay the charges; improved waterways tend to increase the tonnage of this high-grade traffic by permitting the development of many natural resources and deposits which cannot be touched when the high cost of transportation prevents their shipments to the manufacturing plants.

The Pacific and the Atlantic coasts of the United States are at present connected by five great transcontinental lines: Union and Central Pacific, from San Francisco to New York, via Omaha; Southern Pacific, from San Francisco to New York, via New Orleans; Atchison, Topeka and Santa Fe, from San Diego to New York, via Chicago; Northern Pacific, from Seattle to New York, via St. Paul; and Great Northern, from Everett to New York, via St. Paul.

The railways of the United States are private corporations; recently they have been consolidated to such a degree that practically all important lines have passed to the control of a few groups of financiers.

In many countries (Germany, Russia), railways are owned and controlled by the state.

Inland waterways are divided into natural and artificial waterways. The natural waterways include inland lakes and rivers, even when the latter are improved by dredging their channels, shortening their windings or by other constructions for the benefit of navigation. Artificial waterways are canals. These are of two general classes: those constructed to connect separate waterways and those built to overcome obstacles to navigation presented by a river or a lake course. Most of the canals in the United States belong to the second class, a notable exception to it being the Erie Canal connecting the Hudson River and the Great Lakes. This canal is being enlarged at an expense of $100,000,000 by the State of New York, and when the improvements are completed, it will be able to accommodate mechanically propelled barges of 1,000 tons capacity.

The relative cost of transportation on various inland routes is approximately as follows: 25 cents per ton mile on our common roads; between 7 and 8 mills on our railways; about 3 mills on the Erie Canal. In 1907 at "The Soo" canal freight was carried into and out of Lake Superior at 8-10 of one mill per ton mile and the rate on coal from Pittsburg to New Orleans was only 1-3 of one mill (via Ohio and Mississippi rivers).

There are in the United States 287 streams navigated for an aggregate of 26,226 miles, and 45 canals with a mileage of 2,189, besides numerous abandoned canals.

The Ocean.

The ocean is the great highway of international trade. In many instances it is the only connecting road between nation and nation, as well as being the freest and the cheapest of all means of transportation.

Railways require an expensive artificial roadbed, the expense varying with the configuration of land and the cost of acquiring the right of way if the territory to be crossed

belongs to private individuals and corporations; common roads must be improved before they can be used extensively and advantageously for light and heavy traffic; rivers require dredging, canalization, etc., but the ocean, the vast, deep ocean, requires no preparatory work and is ever ready for service. In addition to this, it offers unrivaled opportunities for using the most powerful motors and the largest vehicles that modern skill and ingenuity are able to devise; this leads to the utmost utilization of both space and power and is the reason of the cheapness of the ocean freight rates. These rates are less than land rates because it costs less to give the service and because of the fact that agreements, combinations and consolidations are so much easier effected in case of railway than in case of ocean transportation.

It requires comparatively little capital to enter as a competitor for a share of the world's traffic on sea; the roadbed is given by nature, the harbors are open to all, terminal facilities being usually provided by municipalities, states or private corporations, if individuals own the water front; the vehicle is the only item of expense. If one contrasts this with years of arduous labor and the tremendous investments of capital involved in the construction of a transcontinental line, one will realize why railway transportation tends to monopoly, while water transportation is open to the play of free competition.

Traffic agreements amongst ocean carriers have been frequently concluded, but they are usually unstable. The incentive to cut rates and thus obtain a temporary advantage of increased traffic is too tempting for many of the ship owners to withstand, especially in dull times, and then there is the ever-present possibility of new competitors entering the field. There is no bar to the ship owner's transferring his activity from one ocean route to another; there is nothing that can keep the individual ship from entering any harbor where there is freight and offering her

services, irrespective of conferences and agreements amongst companies which do the work regularly.

Ocean commerce is maintained by steamers and by sailing vessels.

The sailing vessel is to a very large extent dependent upon winds, currents and weather conditions in general; this has an important bearing upon her usefulness. The steamer, with a much greater power of guidance and resistance, is influenced in her course by different factors than those which influence a sailer. The desire to save time and fuel leads the steamer to go in more or less straight lines, deviations being made only to avoid rocks, icebergs and very thick fog. Therefore, the sailing vessel crosses the sea more slowly than the steamer, not only because her speed is usually unequal to that of the latter, but also because of the fact that she can seldom use the shortest distance between two points; her movements are more or less lateral, and she is often compelled to go hundreds of miles out of her course in search of favorable or to avoid unfavorable conditions. This makes the sailing vessel, in addition to being slow, a nondependable medium of transportation, unfit for such traffic as requires speed and punctuality. Few of our business transactions can stand delays and uncertainty of deliveries. This explains why sailing vessels, notwithstanding their comparatively cheap rates, are being rapidly displaced upon all seas by the more expensive steamers.

The sailer's rates are lower than those of the steamer because the cost of her construction is small, her motor power is provided by nature, and as machinery occupies an insignificant part of her space, practically all of her room is available for freight. Only about 5 per cent of the carrying capacity in a sailing vessel is lost, as compared with an approximate loss of 35 per cent in a steamer.

The respective position of the steamer and the sailer as carriers of freight (passenger traffic has passed to the steamer entirely) may be judged from the following figures. In 1875 the gross tonnage of sailing vessels was 14,523,000 tons; that of the steamers 5,226,000 tons; in 1904 the sail tonnage fell to 7,812,000 tons, and the steam tonnage increased to 27,900,000 tons. The data do not show the exact proportion of the work done by the two carriers, as the efficiency of the steamer, because of the rapidity with which she delivers cargoes and is ready for new service, must be placed much higher than the efficiency of a sailer; it is usually considered as 4 for steam to 1 in favor of sail. If we take the matter of respective efficiency into account, we come to the conclusion that in 1904 not more than about 5 per cent of the world's shipping was done in sailing vessels.

The present most conspicuous uses of the sailer are in the lumber coasting trade in America and in other parts of the world, in the carriage of grain from Pacific Coast harbors tc Europe, and of nitrate of soda from Chile; but even in these cases sailers are losing ground; specially constructed steamers to meet the requirements of this traffic are driving them from their last field of regular activity, leaving for them only spasmodic trade over long distances.

The sailing vessel is often a desirable vehicle for goods on hand sold for future delivery. A long voyage is then welcome because it saves storage expenses at either or both terminals.

Steamship transportation may be divided into regular (line) and irregular (charter) traffic.

Those parts of modern commerce which require punctual and regular deliveries, such as the shipment of high-grade goods, of mail and express matter, cannot depend upon the spasmodic services of a chartered ship. These

articles, just as passengers, require definitely known dates of departure and arrival, the keeping up of a schedule.

Line traffic is maintained between harbors which by the amount and character of their shipping warrant such a service (New York, Philadelphia, New Orleans, San Francisco, London, Liverpool, Hamburg, etc.). It entails many expenses not to be found in the charter traffic. The maintenance of a schedule is costly as the vessel must depart upon a certain date, whether she is fully loaded or not, and if she is loaded before time, she must wait for her scheduled date. Harbors indicated in the schedule must be entered, whether the cargoes warrant this or not. Because of these conditions extensive advertising campaigns are conducted, especially in order to attract passenger (tourist and emigrant) traffic. The notice in the newspaper, the magazine article, the chromo, the illustrated booklet, the luxuriously appointed office, the persuasive agent are some of the expenses of line traffic not characteristic of charter transportation. To these we may add the greater cost of constructing liners and larger expense of operating them (more numerous crews, greater consumption of coal, etc.). On the other hand, the superiority of the line traffic service commands a higher freight and passenger rate.

Charter Traffic.—Amongst the hundreds of the world's ports, there are comparatively few whose commerce is sufficiently large, diversified and evenly distributed throughout the year to keep line steamers busy. Most of the harbors have only a few commodities for shipment, and these only at certain seasons of the year. Goods shipped from these harbors are usually raw or half-finished materials, inexpensive, heavy and bulky. This traffic is carried on by independent cargo boats, called tramps, which are chartered by the shippers as the occasion warrants. The traffic is known as charter traffic. The difficult work of bringing ships to the cargoes and providing cargoes for ships

evolves upon ship brokers and steamship agents, and is made possible only through a careful organization. A chain of correspondents in all countries keeps the steamship agents posted of the requirements of the widely scattered harbors and of the whereabouts of the thousands of tramp steamers which rove the seas in quest of freight.

Ship owners when making contracts consider possibilities of return cargoes and make their charges accordingly. The amount of freight moved to and from a point is not always the same in both directions. This often necessitates the sending of ships to places where no return freight may be procured. Shipments offered by the near-by ports are then considered. A ship owner may accept freight at a certain rate from Liverpool to Paraguay, because he can get a cargo from Argentine to the United States and from the latter place to Europe. If no cargo can be procured, vessels, for the purpose of sea-steadiness, must carry ballast. Modern large steamers have compartments for water ballast, which insures quick loading and unloading, the operation not interfering with any other work on the steamer; but most of the cheaply constructed charter vessels lack such compartments, and thousands of tons of stone and sand are carried by these steamers from port to port. Because of the necessity for carrying ballast any freight is considered better than none, and ships are willing to take it at any price. Coal is frequently such freight; the transoceanic shipments of coal have been made possible by the uneven distribution of traffic in both directions. Vessels can be chartered at a rate of from 7 to 8 shillings a ton from Newcastle or Cardiff to San Francisco, because of the return cargo of wheat from the last-named harbor, wheat paying for the same distance from 40 to 50 shillings a ton. Japan exports coal notwithstanding her need for it at home and its comparatively poor quality, because Japan is an importer of bulky freight and has only light cargoes for return shipments.

Ocean Routes.—Ocean transportation is similar to land transportation in that it has both main routes and branch lines or feeders.

The chief ocean route is the one leading from eastern North America to western Europe. Its trunk line connects New York and other Atlantic ports of the United States and Canada with the harbors of Great Britain, Germany and France. This North Atlantic trunk route has a number of feeders from and to the ports of the Mediterranean and Baltic Sea in Europe and the Gulf of Mexico and the Caribbean Sea in the United States.

The route second in importance to the North Atlantic is the one to the Orient via the Mediterranean and the Suez Canal. It connects the eastern part of the United States and western and southern Europe with India, the East Indies, China and Japan. Sailing vessels are barred from this route because of the unfavorable winds in the Mediterranean, the rocks, narrow passages and calms in the Red Sea, and the high tolls at Suez.

The South African route is used for trade with South Africa, Australia and New Zealand. The route is often called Good Hope Route because it curves at the Cape of Good Hope around the African continent. It is an especially good sailing track, in view of the regularity of the prevailing winds in the tropics, and of all the sailing lines, this is the most extensively used.

A route around South America (Cape Horn Route) connects the Pacific coast of North and South America with the Atlantic coast of America and Europe.

The Pacific Ocean route unites western North America with eastern Asia. Following the great circle (which because of the spherical shape of the earth is the shortest distance between two points), it skirts the ocean at a high latitude; only those steamers which call at Hawaii pass farther south into mid-ocean and thus add considerably to their distance, more than 800 miles. The lines originate

at Puget Sound, Portland, San Francisco and San Diego in the United States and Manzanillo in Mexico and converge at Yokohama, radiating from there to other Japanese ports, to Manila, or to the mainland of the Asiatic Continent.

The Pacific coast-Australasian trunk line leads from San Francisco, Puget Sound and Vancouver to the ports of Australia and New Zealand (Melbourne, Sydney, Aukland, etc.). The course is either via Honolulu or via Tahiti in the Society Islands.

The enumerated routes are the main avenues of the world's commerce, but they are far from giving a complete idea of all ocean lines, uniting the hundreds of seaports, lines running into and overlapping each other.

Ship Canals connecting great bodies of water and of sufficient depth and width to accommodate modern steamers are few in number and of comparatively recent construction. The oldest of these artificial waterways is the Suez Canal, connecting the Mediterranean with the Red Sea; it was completed in 1869. The canal is the longest of all the existing canals, its total length being 90 miles. It was enlarged in 1896, and its present dimensions give it a depth of 31 feet (at low water) and a width at the bottom of 108 feet and at the surface of 420 feet. The proposed new enlargement, necessitated by the ever-increasing size and draught of the steamers, will increase the depth to 34.5 feet; the work is now in progress. The cost of the canal in its present form is about $100,000,000. The number of vessels that passed it increased from 486 with a gross tonnage of 655,000 tons in 1870 to 3,441 with a gross tonnage of 13,700,000 tons in 1900. The canal has no locks, being at the sea-level its entire distance. Passages are made at night as well as in the day, electric lights being installed throughout the length of the canal. The tolls charged are slightly over $2 per ton.

The great commercial significance of the Suez Canal lies in the fact that it saves nearly 3,000 leagues on the voyage from the harbors of western Europe to the East. Its effect upon shipping to and from the countries of the Orient (India, China, Japan) was immediate and decisive; because of it, the steamer replaced the sailing vessel in the oriental trade, and goods instead of being on the road the larger part of the year reach their destination in a few weeks.

The Kaiser Wilhelm Canal, completed in 1895, connects the Baltic and the North seas; it lies within German territory. The length of the canal is 61 miles and its depth 29 1-2 feet. Although constructed chiefly for military purposes (to strengthen the German navy), it benefits commerce by making it possible for the merchant vessels to dispense with the route around Denmark. Its tonnage approximates 5,500,000 tons a year.

The Corinth Canal, the least important of the now existing canals constructed to shorten ocean routes, was completed in 1893. It is four miles long and connects the Gulf of Corinth, in Greece, with the Gulf of Aegina. Although the tolls are only 18 cents per ton, the traffic is much smaller than was estimated, most of the larger ships preferring the open sea route. The bottom width of the canal is only about 68 feet and its depth is a little over 26 feet. The cost of construction was $13,750,000.

The Panama Canal, when completed, will have a far-reaching effect upon the shipping and the commerce of the world. It will shorten considerably, the routes connecting the Pacific coast of North, Central and South America with the Gulf and the Atlantic ports of Mexico, the United States, and Canada, as well as the routes connecting the Atlantic seaboard with China, Japan and Australia. As projected, it will have a depth of 35 feet and will cost close to $200,000,000.

Of the canals built for the purpose of extending an ocean route from the sea inland the most recent and most important is the Manchester Ship Canal, constructed at a cost of $75,000,000. It is 35 1-2 miles long and has a depth of 26 feet at low water; the depth is being increased at present to 28 feet. The canal made Manchester a seaport.

The Sault St. Mary's Fall Canals, one belonging to the United States, another to Canada, connect Lake Superior with Lake Huron. The registered tonnage of steamers that passed the canals in 1900 was close to 20,000,000 tons, or considerably larger than the Suez Canal tonnage.

Other ship canals are the Willard Canal between Lake Ontario and Lake Erie, around Niagara Falls, in Canada, the Elba and Trave Canal, in Germany, and the Cyonstadt and St. Petersburg Canal, in Russia.

VI. INDUSTRIAL AND COMMERCIAL CENTERS.

Modern cities are centers for collecting, manufacturing, storing and distributing commodities; therefore, their sites are determined by those factors which lead towards localization of industry and commerce in a particular territory and by those elements which tend towards concentrating the work upon a limited area. The causes of localization were considered in IV; as to the concentration of industry, and the growth of cities, they are brought about: (1) by the complexity of modern manufacturing processes requiring large establishments and complicated machinery, (2) by the demand for masses of cheap goods of a standard type and quality the sale of which is made possible and profitable only through large outputs from mills and factories employing many laboring hands, (3) by the improvements in the means of transportation which break up small local industries, giving a decided advantage to those centers where goods may be produced cheaply. Improved means of locomotion are perhaps responsible for

the growth of cities more than any other single factor. In addition to permitting the distribution of city products, they supply urban populations with the necessary provisions (milk, eggs, fruit, vegetables, fish, etc.) and encourage and facilitate the spreading of residential districts by keeping them in touch with the centrally located business sections.

In most cities there is a close inter-relation of the industrial and commercial activities; mills and factories bring with them offices for the sale of goods, as well as a body of brokers or intermediaries between buyers and sellers; they make necessary warehouses for storing merchandise, shipping agencies, insurance companies and banks; the country inn becomes a large hotel, the small accommodation shop a department store; wholesale and retail districts make their appearance; and thus we have a modern city, with huge railway terminals, newspaper offices and theaters, educational and philanthropic institutions; a city with all its ceaseless activity, drawing upon the resources of the surrounding localities, which fall within the sphere of its influence, exchanging the goods of these localities for products of other regions both at home and abroad. The size of the city is largely determined by the size and the economic value of its hinterland, its tributary territory.

A modern city is primarily a center of exchange, and if some of our towns developed from manufacturing centers, in places where abundance of fuel and raw materials made their existence possible, most of the largest cities of today were not influenced either in their birth or in their growth by these factors.

The leading cities of the United States, with the exception of Washington—our national capital, are located either on the seacoast (Boston, New York, Philadelphia, Baltimore, New Orleans, San Francisco, Seattle, or on the Great Lakes and the navigable ports of the Mississippi

and Ohio rivers (Milwaukee, Chicago, Detroit, Cleveland, Buffalo, Minneapolis, St. Louis, Cincinnati and Pittsburg). In other countries we find the same conditions: the largest cities are either near the open sea or on the banks of navigable rivers or lakes.

Some of the inland towns grew because they were located at a place where numerous railways met, just as some of the older cities owed their prosperity to the fact that they were established at places where a number of overland trade routes crossed or converged. Indianapolis and Denver are good illustrations of the first case, Vienna and Paris of the second.

A number of other causes have led to the building of cities on their present sites. Proximity to water power has caused the establishment of a number of towns in New England and in the North Atlantic States; strategic reasons called for military stations and posts, and under their protection trading centers developed; a convenient position in a prosperous agricultural community or in any other productive region may act as a stimulus towards creating a local social and business center, etc.

Good harbors are of paramount importance to a nation. Such harbors must not only be advantageously situated on an indented coast line, sheltered from adverse influences but they also must be properly constructed and effectively managed. Without such harbors the commerce of a country is sorely handicapped. There is a correlation between the ship, a unit of transportation, and the harbor, her terminal. Harbors are the work of nature and man; in some places nature's contribution is of such character as to make the work of man comparatively easy; nature provides a spacious bay with a safe entrance to it; it gives depth of water, exemption from sands and rocks, freedom from heavy tides and dangerous winds. But in no instance has a modern seaport developed and assumed a commanding position in international trade by relying upon

natural advantages alone. Nearly all harbors require more or less heavy expenditures to fit them for shipping; they require permanent waterfront improvements, extensive piers, electric and hydraulic cranes for loading and unloading, warehouses and elevators; most of them demand also the extending and deepening of channels leading to and from the harbor, and this latter demand becomes more and more urgent because of the increased size and draught of the sea-going steamers.

The harbors of the past were all situated on navigable rivers; they could be easily located at some distance from the sea, because the small dimensions of the ships permitted their penetration inland; a fortunate circumstance since land transportation was both inadequate and costly. As ships increased in size many of the river ports lost temporarily their significance, the approach to them being too difficult, too slow and for many vessels altogether impossible. However, recently large sums of money have been spent by some river ports for improving their channels; this has led to their renewed shipping activity, and there are no harbors whose trade has increased so rapidly during recent years as the trade of some of these river ports. Hamburg, Bremen, Antwerp, Rotterdam, Liverpool, London, Philadelphia, New Orleans, Portland have, by perseverance, well-applied labor and the expenditure of millions of dollars, placed themselves in the front rank of the shipping cities of the world, notwithstanding their situation on capricious, irregular rivers, with shifting sands and other dangers to navigation.

There is only one part of the ocean traffic which the river port cannot command; this is the transportation of passengers and the shipment of mail and express matter. Modern Atlantic "greyhounds" are built to break speed records, to act as advertisements to companies possessing them; they are too costly to lose time in slowly ascending and descending rivers. To meet the require-

ments of these steamers, harbors were built on sites as near as possible to the open sea; in most instances these newly created ports are outports (annexes) of the main harbors located more inland—for example, Queenstown an annex of Liverpool, Luxhaven of Hamburg, Bremerhaven of Bremen, etc.

The river port (Hamburg, Liverpool, etc.), the bay harbor (Seattle, Tacoma, San Francisco, Boston, Rio de Janeiro, Sydney, Southampton), and the combination of the river and bay port (New York) possess the advantages of being protected by nature from sea storms. Open roadstead harbors lack this protection; they are located on the ocean shore, facing the open sea; most of these harbors are to be found in Central and South America, in Africa and in southern Asia, where the climate is very even. If climatic conditions are unfavorable such harbors require artificial breakwaters, in order to provide quiet anchorage for steamers. Dover in England, Boulogne in France, San Pedro in the United States are examples of such harbors. In the case of open roadsteads freight must be unloaded into barges, lighters and other craft, as the steamers do not dare approach the shore; this entails loss of time, expense of extra handling, danger of injury to goods, etc.

In a modern harbor, facilities for receiving and forwarding freight must be such as to enable an expeditious handling of goods. Every hour of inactivity in harbor is a serious loss to capital invested in the ship; therefore steamers strive to incur as little delay as possible in the operations of loading and discharging freight. To hasten this work various hoisting apparatus and other mechanical appliances are placed at the service of the ships.

Harbor accommodations depend largely upon local conditions. As most of our leading harbors are situated on rivers, their facilities are influenced by river tides. If the tides are moderate, not exceeding 10 to 12 feet, quays on

the river banks and tidal basins with entrances always open may be used, as in New York, Hamburg, Calcutta; if the tides are great (from 15 to 40 feet), closed docks are essential; such docks are artificial harbors enclosed in solid masonry and with water-tight gates; without docks the draught at low water is insufficient in such harbors to float even small craft. London, Liverpool, Hull, Havre, Antwerp, Portland had to construct closed docks at a considerable expense. In this respect, American harbors have, with a few exceptions, better natural advantages than those of Europe; consequently, they do not require the expenditure of such vast sums of money as have been and are being spent on the seaports of Great Britain, France, Germany, Belgium and Holland.

VII. CHARACTER, IMPORTANCE AND CHIEF COURSES OF THE LEADING ARTICLES OF INTERNATIONAL TRADE.

International commerce has grown since the beginning of the last century from $1,400,000,000 in 1800, to approximately $28,000,000,000 in 1908, an increase of 2,000 per cent. This total includes the whole world, economically undeveloped as well as highly civilized countries, and as the first scarcely participate at all in foreign trade, we may realize how surprisingly large has been the commercial growth of the world's leading nations.

Commerce has grown not only absolutely, but also relatively; it has grown much more rapidly than population, and the per capita share in international trade has risen for each and every inhabitant of the globe from $2.30 in 1800 to about $17 in 1908, or more than sevenfold.

Any attempt to enumerate the commodities which enter into this vast foreign trade would lead us to the filling of pages with names, many of these strange and unfamiliar scarcely known outside of the physical or chemical laboratory, or the machinist's shop; other names repre-

senting the leading staples of our every-day life, the breadstuffs and foodstuffs which appear on the table of the rich and the poor alike. Innumerable as are these articles in name they are no less varied in character and usefulness. A study of the world's imports and exports shows that some of the commodities shipped from land to land are dainty and beautiful, embodying the artistic skill of the maker; others are coarse and unattractive, their recommendation being their utility and their price.

Goods are not barred from foreign commerce because of weight, bulk or perishability. The ore of the iron mine may be found with the fruit of the tropical tree and the skin of the polar bear. Modern means of transportation have not only made shipments possible but they have also led to the standardization of the needs and wants of the people. An article produced in one locality may find a market not only in its immediate neighborhood but throughout the civilized world, and even the semi-civilized regions are being rapidly brought under the leveling influences of the straw hat, the calico shirt and the high-heeled shoe.

Imports and exports of different countries do not necessarily correspond to a country's excess in production over the needs of its population. It may be generally true that exports are from the surplus, but the term surplus is misleading, unless we remember that a need is commercially considered only when there is purchasing power back of it. Each year trading nations produce ever-increasing quantities of goods intended solely for export. The United States makes shoes to be sold in Paris, in Berlin or in Tokio, while thousands of its own people are in need of footwear. Russia ships millions of bushels of wheat to Germany and to England, while her peasants starve because of a diet of herbs and roots.

Shipments of goods are sometimes used as a means for paying international debts, and such shipments may take place whether or not there is a surplus at home.

Of importance to foreign commerce is the relative position of the places of production and consumption within a country. A foreign market may be more contiguous and of much easier access than a domestic one to the producing center of a country; on the other hand a domestic market may be much nearer to a foreign center of production; in such cases there are exports of articles abroad from one section of a country and imports of identical foreign articles into another section.

In connection with international trade the time element in the production and in the consumption of commodities must also be considered. Many seasonable goods are produced at one period of the year in some parts of the world and at another period in others; this is particularly true when comparing the northern with the southern hemisphere and the temperate with the tropical regions. When winter blasts sweep over Europe, Canada and the United States, the warm rays of summer sun shine upon the fields, orchards and gardens of Australia, New Zealand and the West Indies; their cereals and fruits mature, are harvested and sent to northern markets.

No civilized country can withdraw from international trade. Self-sufficiency is no longer possible even for such nations as the United States, which occupies half of a continent and can seemingly produce all that men desire. We have tasted of the fruit of foreign lands, we have learned to know and to like things produced under foreign skies. The needs and desires of men are not stopped by an artificial, political frontier; high tariff duties may temporarily hinder international trade, but it develops in spite of these duties and becomes every year a more important factor in the economic life of each nation.

Goods shipped from land to land are either finished commodities which appeal directly to the final consumer or raw materials of commerce and semi-manufactured wares. The manufacturing industries of a country no longer necessarily depend upon the domestic supply of raw material and fuel. Not mileage, but cost of transportation, is the commercial measure of distance; the ocean, being the cheapest highway, brings foreign lands close together, placing the iron ore from Spain alongside of the blast furnaces of Germany and feeding the cotton from Georgia or Texas to the spindles of England and France.

There are different ways of classifying the wares of commerce; one way is to divide them into raw materials, semi-manufactured goods and finished commodities. The first two form the objects of trade between producers, wholesale dealers and manufacturers, and from the point of view of both quantity and value they are very important articles of foreign commerce. Such commodities are being exchanged in amounts which a few decades ago would have been totally impossible, and both the world's industry and its commerce depend to a very large extent upon their shipments. The technique in handling them is different from that attendant upon the handling and disposal of finished goods.

Another classification is a classification into products of the vegetable, the animal and the mineral kingdoms. However great may be the theoretical value of such a subdivision it is of comparatively little benefit to the practical business man, unless it is used as a basis for many subclassifications, often necessitating the overlapping of one kingdom into another. Textiles, for instance, are made from vegetable fibers, such as cotton, jute and hemp, as well as from the wool of sheep and the thread of silk worms. Textiles compete more or less with each other, woolens with cottons and cottons with silks, and there is every reason from a business point of view to consider

the silkworm and the cotton plant together, notwithstanding the fact that the silkworm belongs to the same kingdom as the horse and the ox.

A few other classifications have been attempted, the most interesting and valuable of which is the classification into: groceries, (colonial goods and others), agricultural products, mineral products, textiles, manufactures (other than textiles).

In determining what are the leading commodities of international trade, we must consider not only the quantity and the cash value of goods imported and exported, but also the economic importance of each article. Some goods from the point of view of tonnage and of dollars may seem insignificant, yet they may supply an imperative material need and therefore they must be considered side by side with wares that give commercial statistics their imposing array of figures. Before the beginning of the last century the wares of commerce were either colonial goods or textile fabrics; both of these were used chiefly by the wealthy; they were highly priced articles (only such could stand the cost of transportation), and they were entirely unaccessible to the great bulk of the population.

Existing commerce is international in the fullest meaning of this word; it supplies not only the whims of a few with costly wares from distant lands, but masses of people with necessities and comforts, transporting and exchanging wheat, corn and cotton fabrics, kerosene and lumber, as well as pearls, ivory and silks.

In the following pages are considered some of the principle articles of foreign commerce.

Groceries.

Wheat is perhaps the most important of all the articles moved in international trade. Because of its palatability and its great nutritive value, wheat is the chief grain used

for bread making in western Europe and in North America.

Wheat thrives in temperate climates, growing in almost every region of the north and south temperate zones, its northern limit being somewhat lower than that of rye, barley or oats and higher than that of corn; its cultivation is carried on to some extent within the tropics, in places where climate is cool in winter. Wheat needs coolness and moisture when it begins to grow and warm, dry weather when it matures.

Europe is the largest wheat-growing continent, producing close to 2,000,000,000 bushels a year, or more than half the total output of the world; but Europe never produces enough to supply her needs in this cereal. Russia, Austria-Hungary and Roumania export comparatively large quantities to other European countries, but these exports are not sufficient to cover the demand and the main vast tide of wheat, flowing each year with an almost clock-like regularity, goes from the thinly settled grain fields of the United States, Canada and Argentina to the empty storehouses of western Europe. No commercial travelers are used to push the wares, no advertising campaigns are conducted, as the buyers seek the sellers; smaller tides of wheat go from India to Great Britain and from the Pacific Northwest and California to China and Japan, whose people have been living for thousands of years on rice but who are gradually being converted into wheat eaters. The production of wheat is not and because of natural conditions cannot be a rapidly expanding industry; therefore the ultimate benefit that would accrue to the white man from converting the hundreds of millions of the yellow race to wheat eating, is very doubtful. The United States is the leading producer of wheat, followed closely by Russia, the two countries yielding annually from 1,200,000,000 to 1,400,000,000 bushels (the amount fluctuates considerably from year to year).

Next in importance as a wheat producer is France, whose output considering the size of the country is remarkably large and suggestive of future possibilities for other countries. France produced in 1908—310,000,000 bushels to Russia's 569,000,000 and Germany's 138,000,000. Argentina with its output of close to 200,000,000 bushels for a population of 6,400,000 is a very valuable factor in the world's wheat trade. British India produces somewhat more than Argentina, but her exports, because of home consumption, are much smaller.

The United Kingdom is the largest importer of wheat, a yearly production of approximately 55,000,000 bushels being barely enough to cover the needs of the population for about three months in the year; for the rest of the time Great Britain lives on foreign wheat. Wheat is imported into the Kingdom all the year round, the date of the arrival depending upon the time necessary for transport and upon the date of the harvest, which varies in different parts of the world, Australia and Argentina harvesting wheat in January, India in February and March, Mexico in April, the United States and southern Russia in July, etc.

Wheat is classified as "hard" or "soft," soft wheat containing a large percentage of starch and used for making flour, hard varieties having more gluten or protein and suitable for making such foods as macaroni. According to the season of sowing, wheat is classified into "winter" or "spring," the latter being a more northern variety. Winter wheat is sown in autumn and harvested in early summer, spring wheat is sown in the spring and harvested in late summer. Wheat manifests local preferences, so that a variety which may grow advantageously in the Dakotas may fail in India and vice versa.

Rice is, next to wheat, economically the most important cereal, as it is the principal food of at least a third of humanity, a larger proportion of the world's population

living on rice than on wheat. Rice does not figure prominently in international commerce; this is due to two facts: first, rice is not the staple of the commercial nations, second, it is mostly consumed at the places of production.

Rice is almost universally cultivated in Asia, the only exception being the northern portion of the continent. The Chinese Empire, British India and Japan are the leading rice-producing countries. China and Japan, notwithstanding their large production, barely meet their home demand; British India exports considerable quantities, more than half of the rice in the world's commerce coming from there. Japan exports some of the better grades, importing an inferior article from India and China. In Africa rice is grown principally in Egypt, but some is cultivated also along the eastern and western coasts of the continent, as well as in Madagascar. Rice is raised in some parts of Europe, particularly in Italy. The United States produces about half of the rice it consumes, the other half being imported from eastern Asia.

Rice needs a great deal of moisture and a very warm climate; it thrives best in tropical and sub-tropical regions, in places of abundant rain fall or where there are facilities for artificial inundation. Rice is richer in starch than any other cereal and it is very nutritious.

Corn cultivation is carried on in many countries, but only in a few is it an industry of great importance. In the United States, corn is the largest single crop, amounting at present to about 2,600,000,000 bushels a year, which is more than 3-4 of the total corn production of the world; other countries producing corn more or less extensively are Mexico, the Central American Republics, Austria-Hungary, Italy, Spain, southern France and Egypt.

In Europe corn is known under the name of maize, the word corn being used to denominate any kind of grain; i. e., wheat, oats, barley, etc.

Considering the enormous amount of corn produced, comparatively little of it is being exported from the United States. Corn does not enter prominently into foreign commerce, the reason for this being its low price in proportion to its weight and bulk, which makes its transportation over long distances too expensive. However, the indirect consumption of corn abroad in the form of meats is very great; it forms an element of the slaughtering business, being used as a fodder for cattle, as it contains a larger percentage of fats than other cereals. This is its only use in Europe. Canned corn may be found in large cities frequented by American tourists, but it is very expensive and its sales are limited. The United States raises large quantities of an edible variety, known as sweet or sugar corn. Mexico, Central America and Egypt also raise considerable quantities of this variety.

Corn is a warm weather plant, being easily damaged by frosts.

Rye is cultivated extensively on the mainland of Europe and next to wheat is the principal food of the people in many parts of the continent. The rye crop of the world approximates 1,500,000,000 bushels a year, the greatest amount of this (about 85 per cent) being produced in Russia, Germany and Austria-Hungary. Russia's yield is more than half of the world's output.

Rye can be grown on poorer soil and in colder climates than wheat and it requires little care.

Rye does not figure prominently in foreign commerce. Russia is the only country exporting considerable quantities of it to Germany and to Holland; some rye is also shipped from Hungary and Roumania.

Barley can be cultivated both in colder and in warmer latitudes than any other staple cereal. Most of the barley is grown in Europe, where it can be grown from the northern parts of Scandinavia to the southern extremities of Italy; in very warm regions it thrives on

mountain sides, climbing the slopes higher than other cereals.

The total barley crop of the world exceeds 1,000,000,000 bushels; Russia, Germany, the United States, Austria-Hungary and Great Britain are its largest producers. Russia, the United States, Roumania, Turkey and Algeria, are exporters while the United Kingdom and Germany are the largest importers.

Ground or "pearl" barley is edible and is being used for culinary purposes; barley bread is used in Scotland and in Scandinavia. Barley however is cultivated mostly for the making of malt, used in the production of beer. Barley is also used to some extent as horse feed.

Oats is a hardy plant capable of thriving in a cooler and moister climate than wheat. It is grown particularly in the northern parts of Europe, largely near the Baltic coasts of Germany and Russia. Oats is used mostly as horse feed, although ever-increasing quantities of it are being consumed by people in the form of breakfast foods.

Hops are the dried fruits of a vine and they are used as a seasoning for beer, giving to the latter a bitter flavor. They are cultivated in beer-producing countries, in England, Germany, Austria and the United States. The value of the latter country's imports and exports are about equal. England is one of the largest importers of hops, most of our shipments going to that country.

The potato is one of the most universally grown edible roots. Large areas are devoted to its cultivation in various parts of the world, in the majority of cases with very satisfactory results; enormous quantities of the tubers are raised in Europe and in the United States.

Potatoes do not play an important role in international trade; like tomatoes, turnips, parsnips, carrots, cucumbers, asparagus and other vegetables, they are mainly consumed near their places of production; their small exchange

value in proportion to their bulk forbidding distant transport.

In North Germany and in Ireland the potato forms the largest part of the diet of the working classes. Germany's yield of potatoes in 1908 was 45,538,000 tons, thirteen times as large as her yield of wheat or barley. The next largest producers and consumers of potatoes after Germany are Russia, Austria-Hungary and France. There are two varieties of potato; the Irish or white potato and the yam or sweet potato. Besides being used as articles of food, potatoes yield alcohol as well as the greater part of the starch for commercial and technical purposes. The United States is both an importer and exporter of potatoes; our imports in 1909 (an exceptional year) reached 8,385,000 bushels.

Pulses or leguminous vegetables are extremely nutritious and therefore hold an important place as foodstuffs. They are consumed in considerable quantities in all parts of the earth, the leading commercial varieties being common peas, beans, chick peas, and soy beans.

Peas are cultivated in Great Britain, in north central Europe, in Canada and in the northern parts of the United States; beans require somewhat lower latitudes.

By cultivation the bean has been made to vary in size, taste, color and composition; the varieties are sold under different names, such as kidney beans, marrowfat beans, haricot beans, etc., but they are all derived from the same ancestral stock. The lima bean and the soy bean belong to a different species.

The United States imports and exports both beans and pease; the exports are insignificant; the imports in 1909 reached the value of about $5,000,000, forming the largest item in the list of imported vegetables.

Pulses enter foreign commerce mostly dried.

Fruits for table use have risen recently to a prominent position in foreign trade. The use of specially con-

structed cars and steamers with provisions for ventilation and cold storage, the rapidity with which distances are overcome permit shipments of such delicate foods as fresh grapes, peaches, cherries and apricots. Grapes are exported from southern Africa and Australia to northern Europe, bananas from the British West Indies, Central America and Cuba to the United States and Great Britain. The value of our imports of bananas alone exceeds $11,000,000 a year; in 1909 the total value of our entire imports of fruits and nuts was $31,110,000; these imports, in addition to bananas, included lemons, currants, grapes, olives, dates, figs, raisins, oranges, walnuts, almonds, cocoanuts, etc. The United States exports to the United Kingdom, Canada, Germany and other countries, apples, apricots, oranges, peaches, pears, prunes and raisins; in 1909 the value of exports exceeded $16,500,000, a large part of which consisted of green or ripe fruit.

Canned Goods. Many fruits and vegetables, as well as meats and fish are pickled, dried or canned for trade; this last process has been rapidly gaining in popular favor, especially in the United States. The advantage of canned goods is their safety against decay. At present almost everything edible is canned, from fresh buns and bread to frog's legs and bird's nests. Special orchards, gardens, and farms, both in the United States and other countries, are devoted to the raising of vegetables and fruits for canneries. An idea of the magnitude of the industry may be gained from the fact that in 1908 the United States used more than 1,200,000,000 cans; besides greens it consumes a part of the catch of our fishermen and some of the product of the meat packer. Tinned goods are of special value to the white man in arctic and in tropical regions; he fails to find there those foods which experience of centuries makes him consider essential to his well being; he can get these foods only by resorting to the products of the cannery. An important item in the handling of canned

goods is that the contents of the cans must be fresh and wholesome. A new and attractive label is not sufficient, and it is easier to gain a bad reputation than a good one. Stale goods are no longer saleable even in remote regions.

Sugar is one of the most important vegetable commodities. It is mainly obtained from either sugar cane or sugar beets; the first is a perennial plant grown easily and abundantly in the tropics and sub-tropics, the second is a product of careful cultivation in temperate regions. In 1908 the amount of cane sugar produced was 7,218,000 tons, of beet sugar 6,980,000 tons; these figures indicate a change in the relative position of the two varieties. Since the introduction of beet sugar on the continent of Europe less than seventy years ago, the industry has been growing at a rapid pace, finding a good market for its products in the densely populated areas at home as well as in Great Britain and the United States; in these two latter countries the large consumption is so disproportionate to the home production that they are a coveted prize for exporting nations. Ever since the eighties of the last century, there was no year when the tonnage of beet sugar has not exceeded that of cane sugar. It has been a typical illustration of an economic struggle between the man of the tropics and the man of the temperate regions. On one side there was fertile soil and favorable climate, but the man, indolent, unaccustomed to long sustained work, unable to submit to discipline and ignorant of system; on the other sandy plains and gray skies, but the man persevering, unceasingly planning and toiling, co-ordinating his actions to those of others. The result was inevitable. However, modern methods and machinery are being introduced in the cane fields of Cuba, Hawaii, Java and Brazil; people of ability and knowledge are being drawn to these regions, and the sugar cane may soon show its strength as the competitor of the beet.

England is the largest per capita consumer of sugar, approximating 94 pounds a year; a part of this sugar is consumed in the making of jams, jellies, etc., which are exported. The per capita consumption in the United States is 77½ lbs., in Denmark 74 lbs., in Germany 41 lbs., in France 36 lbs., in Russia 21 lbs., in Italy 8 lbs.

Beverages.

Tea.—The average annual export of tea from tea-producing countries is 1,100,000,000 pounds, valued at $100,000,000.

China exports the largest quantity of tea, but India exceeds it in the value of the product exported. This is largely because many inferior grades are shipped from the first-named country. Ceylon is third in the list of exporters, followed at quite a long distance by Japan, Java and Formosa.

The greatest tea importer in the world is the United Kingdom, her imports averaging 260,000,000 pounds a year; Russia follows with an average import of 126,000,000 pounds. In 1909 the United States imported close to 115,000,000 pounds, about half of which quantity came from Japan. Tea is consumed in more or less large amounts in Canada, Australia, as well as all over Europe.

Within recent years teas from India and Ceylon have been displacing the Chinese varieties in the world's markets, but just as the producers of the sugar cane are making strenuous efforts to recover some of the ground lost, so also are the Chinese tea manufacturers and merchants striving to improve their position by introducing modern methods of cultivation and manufacture.

Teas are classed commercially, according to their color, into green and black, the difference being due to the methods of curing the leaves. Green teas are made by drying the leaves rapidly, with little exposure to the air; black teas are dried slowly and mainly in the sun. According

to the method of preparation, teas are classed as Basket-fired, Pan-fired, Imperial, Gunpowder, etc.; according to quality, dependent on the age of the leaf when it is picked, as "Pekoe" (the youngest), "Oolong," "Fouchong," etc. The buyers consider also the district where the tea is produced: Japan, India, Formosa.

Tea is a very hardy sub-tropical plant and is suited for a wide range of climate; it thrives best in warm, moist places with equable temperature throughout the year. As the preparation of tea for the market requires a great deal of manipulation by hand, its growth is profitable only in those places where there is an abundant supply of cheap labor.

Australia is the largest per capita consumer of tea (7.1 pounds); the consumption in England is 6 pounds, in the United States 1.3 pounds, in Russia 1.25 pounds, in Germany 0.13 pounds.

Yerba Maté is a Paraguay tea used extensively in South American republics; it grows in Paraguay and in Brazil, the exports of these two countries reaching into many millions of pounds.

Coffee is cultivated principally in Brazil, which produces about three-fourths of the world's total supply; other coffee-growing countries are Venezuela, Colombia, the Central American republics, Java, Mexico, and the West Indies. Brazil, with a total production of about 18,000,000 bags (of 120 pounds each), controls the world's markets.

Coffee is classified according to the places of production or shipment, as Rio, Santos, Guatemala, Mocha, and Java. The name Mocha is given to coffee produced in Arabia, and Java to that raised on the islands of Java, Sumatra, Borneo and Celebes. However, a great deal of what is now sold as Mocha and Java is grown in other countries, its flavor being the only claim to the name.

The stimulating effect of coffee is due to the presence of an alkaloid—caffeine. Theine, the alkaloid of tea, is

practically identical with caffeine. The quantity contained is small (0.6 to 1.8 per cent), varying with the species of coffee.

The United States is the chief consumer of coffee, importing annually about 1,000,000,000 lbs., or more than one-third of the world's commercial crop. Next in importance as coffee consumers are Germany, France, Austria-Hungary, Holland, Belgium and Great Britain. The greatest per capita consumers of coffee are the Netherlands, the United States and Belgium.

Cacao—the product of a tropical tree (not to be confused with the cocoanut tree), is used either as a beverage or for the making of chocolate. It contains fat, nitrogenous matter and starch, and has therefore great nutritive value. The chief producers of raw cacao are Ecuador, Brazil, Trinidad, Venezuela and the island of San Thome (in Africa); less important are Cuba, Porto Rico, Haiti, Jamaica, other West India Islands, and the Gold Coast of Africa and Ceylon. The total world's crop exceeds 150,000 tons. Cacao may be found in the import list of every commercial nation, and it seems to be gaining in favor as a beverage. This is particularly true of the United States, whose imports of cacao rose from 63,000,000 lbs. in 1903 to 129,854,000 lbs. in 1909, or more than doubled themselves. Spain and Portugal are the largest per capita consumers of cacao.

Alcoholic Liquors.

Wine.—The grape vine needs a moderately high temperature during summer and far into the autumn; otherwise, it does not mature so as to make it fit for wine making. The limits of cultivation are fixed not only climatically, but also commercially; many regions have given up wine making because of the inferior quality of the wine produced; this has taken place in southern counties of England and in the provinces of eastern and western Prussia;

their wine industry succumbed to the competition of better grade wines, produced in other localities.

The finest and largest vineyards are those of France, Italy and Spain, these three countries producing about 1,800,000,000 gallons a year, or 85 per cent of the total output of the world. Austria-Hungary, Portugal, Germany, Russia, Bulgaria and Roumania are the next largest producers, in the order named. The output in the United States is comparatively small and confined to the states of California and New York. In 1909 our imports of sparkling (champagne, etc.) and still wines exceeded $12,000,000.

Each district raises wine peculiar to it, peculiar in its flavor and other characteristics; there are as many varieties of wine as there are localities raising the grape.

Grapes are cultivated also as a dessert fruit and for the making of raisins; the latter industry is confined to Malaga and Valentia in Spain, to certain districts in Asia Minor, to Greece and to California.

Beer is made mainly from malted barley, but almost any kind of cereal may be used for the purpose. Hops are added to impart a slightly bitter flavor. Two countries rise above all others in the amount of beer produced and consumed; these countries are the United Kingdom and Germany; Belgium excels them in the per capita consumption of beer (150 quarts a year), and Denmark nearly approaches them (90 quarts). The more prominent of the other beer-consuming countries are the United States, the Australian Commonwealth, and Switzerland. The United States imports about 7,000,000 gallons of malt liquors, exports little.

Animal Products.

Domestic animals, particularly cattle, take an important place in foreign commerce; but the shipments of live cattle have decreased considerably since the introduction of re-

frigerator cars and cold storage steamers made possible transportations of fresh dressed beef. Live animals are shipped mostly for slaughtering or for breeding purposes. The leading cattle raisers are the United States, Russia, Argentina, India and Australia. Sheep are exported particularly from Australia, Argentina, the United States, Canada and Russia, these five countries possessing the largest amount of sheep. Horse meat is consumed to some extent in France and in Germany, but the most significant value of horses lies in their use as draft animals in all the temperate regions of the world. The United States is next to Russia the possessor of the greatest number of horses. Comparatively few live hogs are transported from country to country; the same is true of all other domesticated animals, like goats, mules, asses, etc.

Meat Products.—Wholesale slaughtering and meat packing for export are important industries in the United States, in Argentina and in Australia. The products are shipped to all parts of the world, but the leading markets are Great Britain and the manufacturing states in the northwestern section of Europe. Meat products comprise fresh, salted, pickled and canned beef, bacon, ham and pork, tallow, lard, oleo oil, sausage and sausage casings. The chief exporters of mutton are Argentina and New Zealand.

Dairy Products.—Butter, cheese and condensed milk figure prominently in foreign trade. The United States imports close to $6,000,000 worth of cheese, mainly from Italy, Switzerland, Holland and France. Canada, one of the leading cheese producers, exports large quantities of cheese to Great Britain. Until recently trade in butter was confined to shipments between adjacent countries, but since the introduction of cold storage, butter can be sent long distances without impairing its quality and flavor. In Europe, Denmark, France and Holland have developed

dairying to a high degree, and they export much butter, particularly to England.

Poultry and eggs figure largely in foreign commerce. Great Britain is one of the leading markets, and Russia one of the main sources of supply; over 1,500,000,000 eggs are annually exported from the latter country; these are sold, however, mostly on the continent of Europe and not in England, which imports better grades from Denmark, northern France, Canada, etc. The United States' exports of poultry and eggs approximate $2,000,000 annually.

Fisheries.

If under the head of fisheries one includes the commercial production of all the marine animals used as food, such as oysters, lobsters, etc., one finds that the most valuable fish catch is furnished by the United States and by Great Britain, other fish-yielding countries being Canada, Newfoundland, Russia, France, Norway, etc.

Most of the fish is consumed fresh, in the districts adjacent to the places of their production, near the seacoast or close to rivers and lakes. International commerce in fish, although large, does not give it an especially prominent place in either imports or exports of the leading commercial nations.

Norway and Newfoundland export most of their catch, the largest importers being Spain, Portugal and Italy, where the consumption of fish during the lenten season is very great. The catch of Germany is insufficient to supply her home demand and she is one of the leading fish-importing countries.

Herring is one of the world's most widely distributed and most valuable fishes. In nearly every country which has extensive fisheries some variety of herring is caught; on the eastern and western coasts of North America it is known as sea herring, the shad, the river herring, and the "American sardine;" on the shores of Europe the same

varieties with the addition of the pilchard and the "white bait" are caught. Herrings abound also in the waters of Siberia, Korea, Japan, the Philippine and the East Indian Archipelago; in the rivers and on the coasts of India, in Australia and New Zealand.

The "Grand Banks" of the coast of Newfoundland furnish cod and haddock. Codfish are mostly dried and cured; so prepared they find a ready market in Spain, Italy, France, Austria-Hungary, in Central and South America and in the West Indies. Countries exporting cod, besides Newfoundland, are Canada, the United States and Norway.

Salmon are caught mostly on the Pacific coast of North America, from Alaska to Oregon; some of the fish are shipped refrigerated as far as the eastern markets, but by far the largest part of the product is canned.

Sardines, not young herrings, but real sardines, are caught on the Atlantic coasts of France, Spain and Portugal, also in some parts of the Mediterranean Sea. France exports millions of cans of sardines put up in olive oil.

Other varieties of fish extensively used are sole, halibut, mackerel, shad, trout, bluefish, whitefish and sturgeon; the latter fish is valuable, not so much because of its meat, as because of the roe, which is prepared and salted and in this way is put on the market under the name of caviare. Caviare is made in Russia (on the shores of the Caspian and Black seas), also, in some parts of Germany and in the United States (on the Great Lakes, on Delaware Bay and in Oregon).

The value of the United States' imports of fish (in 1909 —$12,403,000) is double of its exports; most of the fish comes dried, salted, pickled, smoked or canned; more than half of the exports is canned salmon.

Oysters.

About 35,000,000 bushels of oysters are produced annually, two-thirds of which amount is credited to the United

States, where oysters represent the most valuable product of the fisheries. In the United States the oyster is an article of general consumption, while in Europe it is a luxury. European oysters come from the shores of the Atlantic (England, France and Spain), and the North Sea (Holland and Germany). The product is brought to the market either fresh or canned.

American oysters are considered amongst the best in the world; the demand for them is very large, and as the natural supply is insufficient to meet it, oyster culture is carried on extensively, especially in the states of New York, New Jersey, Maryland and Virginia; the shell fish has also been transplanted to the coasts of California and Oregon.

Spices and Condiments.

Spices and condiments, in their aggregate, form an important item of international trade. They are used extensively for the purpose of making articles of food more palatable or digestible. Some spices, like mustard or caraway seeds, grow in most parts of Europe, America and Asia; but the majority of spices are products of tropical and subtropical regions and therefore must be shipped long distances to the places of consumption. The most commonly known varieties are pepper, cloves, nutmeg, allspice, ginger, cinnamon and vanilla. In 1909 the United States' imports of spices exceeded 78,000,000 pounds, valued at $5,348,000.

Narcotics.

Tobacco, first discovered in America, is grown in nearly all parts of the world. However, for a successful cultivation it requires warm summers and a total absence of frosts, when it begins to grow. There are innumerable varieties of tobacco, the many gradations in quality and flavor being due to differences in soil, climate, method of cultivation; further, the same plant produces different classes of leaf, some suitable for pipe tobacco, others for

the manufacture of cigarettes, etc. The stems or midribs are used for snuffs, for making sheep-dip and for fumigating purposes.

Commercially tobacco is classified according to the place of production or of export, i. e., Virginia, Turkish, Havana; according to the use for which it is intended, as pipe, cigar, chewing and cigarette classes, each class being subdivided into types, dependent upon color, flavor, strength, elasticity of the leaf, etc.

The United States leads in the production of tobacco; it exports inferior kinds to the extent of about 300,000,000 lbs., and imports better grades from Cuba, Sumatra, Egypt. The total average annual production of tobacco is considerably over a million tons, valued at $200,000,000, the producers being the United States, India, Cuba, Russia and the Dutch colonies in the East.

The largest per capita consumers of tobacco are Holland and Belgium, with an average annual consumption of 6.2 lbs.; the United States has an average of 5.4 lbs.; Germany 3.4 lbs.; the United Kingdom 1.9 lbs.; Russia 1.1 lbs.

Opium is used extensively as a narcotic in China and throughout the East in general. Opium is the dried juice of the white poppy and its production is particularly important in India, China, Persia and Asiatic Turkey. Opium, besides being a narcotic has medicinal value as the source of morphine. In 1909 the United States imported about $2,000,000 worth of crude opium for medicinal purposes and close to $1,000,000 worth of the drug prepared for smoking, the latter mainly for the use of the Chinese residing in this country.

Fibers.

The cultivation of fiber-yielding plants, the rearing of fiber-producing animals and the manufacturing of the material furnished by both into threads, ropes and yarns,

dress goods and underwear, mattings and carpets are amongst the world's most important industries.

Vegetable fibers are obtained from leaves and leaf stalks (Manila hemp), from the bast of plants (flax, jute), from fruit (cocoanut), from plant hairs (cotton), from stems (broom corn, rattan).

Cotton is cultivated throughout the tropical and warm temperate regions of the earth. Over three-fifths of the fiber is grown in the United States, other important producers being India and Egypt. These three countries supply the most of the world's commercial demand. In Europe small areas under cotton are found scattered in Spain, Italy, Turkey and Greece. In Asia some cotton is grown in China, Japan, Persia and Asia Minor, everywhere almost entirely for local consumption. Cotton is cultivated also in Central America, the West Indies, Mexico, Brazil, and Peru, as well as in many parts of Africa. On the latter continent the culture of cotton is being encouraged by the governments of the colonizing nations, i. e., Germany, France and England.

The cotton plant yields a soft fiber which surrounds its seeds, and from which yarn for fabrics and ropes is woven. The fiber is also used for making nitro-cellulose, the commercial products of which are explosive celluloid and artificial silk (mercerized cotton). Cotton yarn is the chief material for the making of underwear and clothing. Cottonseed oil is manufactured for table and kitchen use, for the making of soaps, candles, etc. The oil cake is a good cattle food and fertilizer.

There are numerous varieties of raw cotton, their quality depending upon the length of the fiber, its softness, strength, regularity and color.

Upland or American cotton grown in the Atlantic States is the most generally used variety; sea-island cotton raised along the coast of South Carolina and Georgia and on the adjacent islands is the most expensive of all cottons, be-

cause of the comparative length of the fibers, their softness, etc.; Egyptian cotton is of fine quality and is highly valued in European markets; some Egyptian cotton is imported into the United States, in 1909 about 68,000,000 pounds.

Indian cotton is short and of inferior quality, though lately more care is being bestowed upon its picking and the keeping it free from dirt after it has been picked.

The cotton exchanges of the United States recognize thirteen distinct grades of cotton, determined by the degree of color and the amount of foreign matter. These grades range from "ordinary" and "strict ordinary" to "middling" and "fair." Discolored cotton is designated by the word "tinged" or "stained" following the grade. Tinged cotton is only slightly discolored; stained ranges from a light yellow to a deep red.

The basic grade in all markets is middling, white cotton; by this grade the quality of all others is measured; it is a fleecy cotton containing only a small amount of impurities. Fair cotton, the highest grade recognized by the markets, is very bright, white and clean. The classification of Indian cotton varies somewhat from ours.

In 1909 the amount of exports of unmanufactured cotton from the United States was 4,448,000,000 pounds valued at $417,390,000; of this amount the United Kingdom took 1,833,000,000 lbs., Germany 1,219,000,000 lbs., France 549,000,000 lbs. and Italy 283,000,000 lbs. Outside of Europe the only purchaser of our raw cotton of any importance is Japan, to whom we sold in 1909—105,000,000 lbs.

A rather disappointing condition is revealed by the figures showing the export of the cotton manufactures from the United States; in 1909 their value was about $32,000,000, very little indeed for a country raising within its territory about 66 per cent of the staple and exporting such tremendous quantities of raw material. The exports of cotton manufactures and yarn from England approxi-

mate $500,000,000 a year; this latter country has the largest number of cotton spindles, about 53,000,000, and in 1908 consumed 20.4 per cent of the world's mill supply of cotton; the United States consumed about 23.9 per cent; the smallness of our exports shows the importance of our home market for the products of our cotton mills and factories. In addition to the domestic output the United States uses from $60,000,000 to $70,000,000 worth of imported cotton manufactures, about one-half of the imports consisting of laces, edgings, embroideries, etc. Germany consumes about 8.5 per cent of the world's cotton, British India 8.2 per cent, Russia 7.9 per cent, France 5 per cent.

Seventy-five per cent of the raw cotton used by Great Britain comes from the United States, 18 per cent from Egypt, 4 per cent from India and 3 per cent from Brazil. Raw cotton is the largest single import of Germany, the United States supplying 2-3 of the amount, British India and Egypt the rest, and manufactured cotton is Germany's principal export; in 1908 it exported $108,000,000 of cotton fabrics. France occupies the third place as an exporter of cotton goods. Probably the most interesting development in the cotton-manufacturing industry of Europe during the last decade, paralleling somewhat the activity in our southern states, is the rise of Italy as a cotton manufacturer. Since 1900 it has increased the number of its spindles from 1,940,000 to 4,181,000 and its consumption of raw cotton from 2,375,000,000 pounds to 5,135,000,000 pounds.

Flax is next to cotton the most important vegetable fiber. It thrives in various climates, its area of cultivation extending from British India to northern parts of Russia. The plant is grown either for seed or for fiber, good seeds usually meaning poor fiber and vice versa.

Russia is the leading producer of flax, more than one-half of the world's supply coming from that country. Russia's importance as a linen manufacturer is, however, far smaller than that of England; the latter has ten times

as many spindles as the first-named country. Germany, France, Austria-Hungary have also extensive linen manufactures, though their production of flax is insignificant as compared with that of Russia; Austria-Hungary, the next leading flax cultivator, produces about one-tenth of the Russian output.

Flax is the strongest of plant fibers, being at the same time soft and pliable; it has been supplanted by cotton for many purposes, not because of the superiority of the latter material but because of its cheapness. Probably the best flax is that grown in Belgium, out of which the famous Brussels and other laces are made. The preparing of flax fiber requires a large amount of trained hand labor and the countries where labor is cheap have, therefore, a decided advantage over those where it is expensive.

Indirectly flax (linen rags) is used for the making of some of the best grades of paper. In 1909 the United States imported $2,542,000 worth of flax.

Hemp fibers are tougher than those yielded by flax; they are used mostly for the making of ropes, twine and fishing lines, as well as for manufacturing of carpets and rugs. The fiber furnishes also a substitute for flax in the production of all grades of linen but the finer.

Manila hemp, cultivated in the Philippines, is the strongest rope fiber in common use.

Sisal hemp, the principal article of export from Yucatan (Mexico), yields fibers less strong and not so long as those of Manila hemp; the fibers are much used for the making of rope, brushes and in the manufacture of sacking for cotton.

Russia produces more hemp than all the rest of the world; the plant is cultivated also in Italy, France, Hungary, Germany, the United States, Algeria and in the warm parts of Asia.

Hemp seeds yield hemp oil similar in nature to linseed (flax) oil; like the latter it is used mainly in soap and in paint making.

The value of the United States' imports fluctuates from $18,000,000 to $26,000,000 a year, most imports coming from Manila and Mexico.

Jute is a native of India where it is extensively grown; it is also cultivated in comparatively small quantities in China, Formosa and Malaya. The plant succeeds best in a hot, damp atmosphere. Jute fiber is used for the manufacture of gunny bags, burlap cloths, cotton baling, cordage, twine, carpets, upholstery fabrics and curtains. The waste material goes into the paper-making industry; it is known under the name of jute butts.

In 1909 the United States imported jute and jute butts to the value of $7,156,000.

The United States' imports of flax, hemp and jute manufactures are about double in value those of its imports of the raw materials; in 1909 these imports were valued at $49,312,000, as against $65,108,000 in 1907 and $54,467,000 in 1908.

Animal Fibers.—Wool is the chief animal fiber used in the making of textiles; before the advent of cotton it was the leading material of the textile industry. Wool is a kind of hair forming the covering of sheep and of a few other mammals. It differs from ordinary hair by having minute overlapping scales and by being wavy and crimped. The curl of the wool imparts elasticity to all woolen fabrics, which distinguishes these from those made from cotton, linen or any other fibers.

The climate best adapted to sheep raising is one that is comparatively dry and free from extremes of cold. The countries having the largest number of sheep are Australia and Argentina; the first had at the end of 1907—88,000,000 heads and exported 584,750,000 pounds of wool; the second with 77,580,000 heads exported 308,000,000 pounds, a

somewhat larger proportion of sheep being raised for mutton in Argentina than in Australia; the other important sheep-raising countries are the United States and Russia, the total wool output of the four named nations equaling about two-thirds of the world's supply. The rest of the wool clip is distributed amongst a great number of countries; in 1908 the United Kingdom had 31,000,000 heads of sheep, which yielded 133,700,000 pounds, an amount entirely inadequate for the needs of her textile industry; the latter used about 428,000,000 pounds of imported wools; France, Uruguay, British South Africa, Spain, British India, Germany, Austria-Hungary, Italy are some of the other important wool producers. Raw wool is the largest single import of France; $116,000,000 worth of it was imported in 1907.

Wool is classified according to the length of the fiber into long-stapled and short-stapled varieties, the breed of the sheep having a great deal of influence upon the staple; the other distinguishing characteristic of various wools is the degree of their coarseness or fineness. The merino sheep, introduced into Spain from northern Africa and from there exported for breeding purposes to other countries, produces the finest wool, soft, strong and curly; the fiber is short and is used in making the finest yarns and fabrics. The majority of the wools of the United States, the United Kingdom, France and Australia are long and coarse; they are designated commercially as "combing," to distinguish them from the merino or "clothing" wools. The name "combing" has been given to them because, before being spun into yarn they are combed, in order to lay the separate fibers parallel to each other; the short staples are "carded," the process tangling the fibers in all directions.

In 1909 the United States' imports of unmanufactured wool (clothing, combing and carpet), amounted to 266,000,000 pounds, valued at $45,000,000; in the same year $18,-

100,000 worth of woolen manufactures were imported; the exports are small, approximating $2,000,000 annually.

Great Britain, France, the United States and Germany lead in the manufacture of woolen goods, consuming about 4-5 of the world's supply of wool; as their production of raw wool does not exceed 1-5 of the world's clip, they depend upon imports of vast amounts of the raw material from Australia, Argentina, Uruguay, etc.

Silk.—The production of raw silk is confined to areas suitable for the cultivation of the mulberry tree, mulberry leaves forming the principal food of the silkworm. Next to wool, silk is the most important of animal fibers used in weaving. The range of climate for silk culture is large, as the mulberry tree can grow in various regions and silkworms are reared under cover protected from cold and other climatic influences. However, the production of raw silk is as yet limited to very few localities, the principal of which are China, Japan, India, Italy, France and other countries bordering the Mediterranean.

China produces about 27 per cent of the world's supply of raw silk, Japan approximately the same amount and Italy 25 per cent, the three thus producing close to 80 per cent.

The geographic distribution of silk culture depends not only on climate but also on the character and price of labor. The raising of the worm and the preparing of raw silk for the market require a large amount of hand labor, labor watchful and delicate and yet satisfied with small returns for the work done.

The United States and France lead in the manufacture of silks, each importing raw material to the value of about $80,000,000 a year; Japan supplies the greater part of the American imports; considerable quantities come also from Italy and China. All silks manufactured in the United States are consumed in the country, the exports being less than $1,000,000, while the imports of silk manu-

factures exceed $30,000,000 a year; about one-half of the latter amount is furnished by France. Silk textiles are the most valuable single item in the export list of France, with cotton textiles as a close second; in 1907 the exports of silks were valued at $72,000,000.

Other silk-manufacturing countries are Great Britain, Switzerland, Germany, Austria-Hungary, Japan, Italy; the silk manufactures of the latter country are gaining in importance, although they are not as yet commensurate with the position of Italy as a producer of the raw material.

Hides and Skins are used for the manufacture of leather. As none of the chief leather-producing countries have enough of these raw materials to supply their home demand, hides and skins form an important item of export trade from South America, Mexico, Australia and India, where stock raising is carried on extensively; the importers are the manufacturing countries of Europe and the United States. The latter country imports goat skins chiefly from the East Indies and South America, but also from Europe, cattle hides and sheep skins; these products form one of the leading imports into the United States; in 1909 their value was $78,500,000.

Vegetable Oils.

Vegetable oils are obtained from the fruits and the seeds of many plants; the most important commercially are olive oil, palm oil, cocoanut oil and peanut oil. The imports of olive oil into the United States exceeded $5,000,000 in 1909; most of the oil came from Italy and France. Olives, from which oil is derived grow most abundantly in southern Europe, in Mexico and in California.

Volatile Oils.

Essential or volatile oils are used in medicine, for flavoring purposes and in perfumery; the most valuable of

these oils are attar of roses, mint, wintergreen, peppermint, caraway, sandalwood, bay, sassafras, bitter almonds. Camphor is a solid essential oil obtained from camphor trees. Most of the camphor comes from Formosa, though some is produced in Japan, in China and in Borneo.

Dyes.

Dyes are of vegetable, animal or mineral origin; the first two are extracts, the last is an artificial chemical compound, produced chiefly from coal tar. Some of the best known dyes are: Indigo, logwood, madder, etc. Indigo is obtained from the juice of the indigo plant, growing in India, Ceylon, Java and Central America; artificial indigo is manufactured from coal tar, the product competing successfully with natural indigo; logwood is derived from a tree growing in Central America and in the West Indies; madder is a powder made from the roots of a plant, cultivated in southern Asia, in central Europe, etc. Coal tar dyes are manufactured most successfully in Germany; from there they are sent all over the world.

Medicines (Drugs).

The crude substances which yield medicines are called drugs; they are of vegetable, mineral or animal origin, mostly of the first. Vegetables having medicinal properties are scattered all over the world, many of them having strong local affinities. As to the demand for drugs, it comes from every latitude and longitude, from every town and hamlet where man suffers pain; therefore medicinal substances play an important role in international trade. Drugs are derived from barks and roots, seeds and leaves, twigs and flowers of various plants and trees; quinine, for instance, is obtained from the cinchona bark, the tree being extensively cultivated in Java, India and Ceylon; coca comes from the leaves of a bush growing largely in the Andes Mountains, in South America; aconite is derived

from the roots of a plant thriving in the Pyrenees, the Alps and some of the mountains of Germany and Austria, etc.

Woods.

Woods are divided into needle leaved or coniferous which are often called "soft woods," and broad leaved, known as "hard woods." A few varieties of coniferous trees are hard (yellow pine), just as a few broad-leaved trees are very soft (cottonwood, poplar, linden). The largest amount of commercial lumber is obtained from coniferous trees: pines, firs, hemlocks, redwoods, spruce; the last is used extensively in the manufacture of paper; other varieties of needle-leaved trees are: larch, cypress, white and red cedar, etc.

Broad-leaved trees are more widely distributed than coniferous trees. They are classified as close grained: maple, birch, sycamore, holly, beech; and open grained: chestnut, hickory, elm.

Mahogany, indigenous to the West Indies, Central America and some parts of South America and Africa, is one of the most valuable furniture woods. It is chiefly desired for its color, firmness, durability and the beautiful polish it is capable of receiving. Other tropical trees used in furniture making are rosewood, ebony, teak.

Almost every commercial nation imports and exports wood and its manufactures. The United States is a heavy importer and exporter, shipping logs, hewn and sawed timber, boards and planks, shooks and staves to Great Britain and other European countries, to Argentina, Canada and Australia. The imports of the United States comprise lumber from Canada, wood pulp from northern Europe, cabinet woods from Mexico, Central America and Africa. Great Britain is the largest single buyer of wood in the world's markets, importing each year to the value of about $125,000,000.

Rubber.

Rubber is the juice of certain tropical trees and vines. The forests of the Amazon River valley furnish more than half of the world's supply, the other rubber-yielding regions being Mexico, Central America, the East Indies and Africa. The United States and Great Britain are the largest importers of crude rubber; they manufacture an endless variety of substance depending upon rubber as raw material, such as waterproof cloth, shoes, boots, tires, tubing, hose, combs, brushes, electrical instruments, etc. In 1909 the imports into the United States were valued at $64,700,000; the exports, consisting mostly of rubber manufactures, are small, not exceeding $7,500,000.

Rubber is graded commercially, according to the country or district of origin, and to the degree of its cleanliness; crude rubber contains more or less large quantities of dirt, sand, bark, etc.

Gutta-percha, a product similar to rubber, is found in the East Indies, Malay Peninsula and a few other semi-tropical countries.

Fuels and Illuminants.

Coal is a heavy and bulky material and because of this it does not enter very prominently into foreign commerce. The leading exporters of coal are Great Britain, Germany, the United States and Belgium. The shipments from the United States in 1909 equalled 11,888,000 tons valued at $37,316,000; about $\frac{3}{4}$ of our exports went to Canada, most of the rest to Mexico, to Cuba and other West Indian markets. The largest proportion of the European trade in coal is also conducted with neighboring countries, English exports going mostly to France, Germany, Italy, Sweden, Spain, Russia, Denmark, and German exports finding their markets in Austria-Hungary, Holland. Switzerland and Russia.

However, English coal crosses the Mediterranean and the Atlantic, going more than half way around the world and supplying the demands for fuel in Egypt, Argentina, Brazil and South Africa. Exceedingly cheap freight rates make such shipments possible. The United Kingdom is the greatest importer of bulky freight; her exports, on the other hand, consist of manufactured goods. Many vessels leaving England have therefore a choice between carrying ballast or coal as ballast substitute; they naturally prefer the latter, the freight they charge helping them to pay the expense of running the ship. That most of the coal is moved across the seas as ballast substitute, may be seen also in comparatively large exports of coal from Japan, a country ranking low as a coal producer, but whose imports, like those of England, are more bulky than its exports. The United States, notwithstanding the abundance and cheapness of coal in the country, has not become an important coal exporter because vessels leaving American harbors have always at their disposal, cargoes capable of standing higher cost of transportation than coal.

Coal is the most important mineral. Its value as a generator of power cannot be overestimated. To use the eloquent words of Prof. Jevons, it is "the material energy of the country—the universal aid—the factor in everything we do, with the aid of which almost any feat is possible or easy and without which we would be thrown back into the laborious poverty of early times." Coal pulsates through mills and factories, entering into the blast furnaces, driving the engines, the steam hammers and the spindles; it turns to smoke and ashes, but as it burns it vitalizes every mechanism with which it is brought into contact, it transforms inertness into creative forces which move and shape the life of humanity.

There are many varieties of coal whose commercial value depends upon the amount of fixed carbon they contain. The most important of these varieties are bituminous

coal (soft) and anthracite coal (hard); the latter contains very little moisture or volatile matter and because of the presence of a high percentage of carbon—over 85 per cent —it has a great heating power.

Petroleum is a liquid bituminous substance belonging, like coal, to the group of hydrocarbons and being, like the latter, the product of decomposition of organic matter. The obtaining of petroleum is practically confined to two countries: the United States and Russia. In 1907 the total production of petroleum in the world was 262,000,000 barrels (of 42 gallons), of which amount the United States produced 166,000,000 barrels and Russia 61,000,000 barrels; more or less valuable oil fields exist also in Austria-Hungary, Roumania, Japan, Peru, Canada and on the islands of Sumatra, Java and Borneo. The crude oil of the United States, especially that coming from Ohio, Pennsylvania and Virginia, yields large quantities of illuminating oils (about 75 per cent), while the Russian crude oil yields less than half of this amount. Russian crude oil and the oil obtained west of the Mississippi River in the United States (Oklahoma, California, Texas) are particularly useful as fuels.

The United States and Russia produce far in excess of their home consumption and ship vast quantities of oil abroad. In 1909 the value of the exports from the United States was close to $106,000,000, most of which consisted of illuminating and lubricating oils; the buyers of our oil are scattered all over the world, in Europe and in Asia, in Central and in South America, in Africa and in Australia.

Metals.

Iron is found in all parts of the world, but in many places it is not mined because of distance from coal and limestone, necessary for smelting, poor means of transportation and lack of capital. The leading producers of iron are the United States, England and Germany. Iron in its natural state is combined with other mineral sub-

stances and is known as iron ore; from this ore pig iron is made by means of smelting in a blast furnace.

Cast iron is pig iron remolten and shaped in sand moulds. As it contains many impurities (sulphur, phosphorus, silicon, carbon), it is brittle.

Wrought iron is made from pig iron; the latter undergoes several processes of remelting in order to remove the impurities. Wrought iron is rolled or hammered into bars, sheets and other forms. Because of the expense of manufacture it has been largely superseded by certain grades of steel, which is for most purposes just as satisfactory and not so high priced. The most important processes of steel manufacture are the Bessemer and the open hearth.

The United States exports some iron ore and some pig iron and large quantities of iron and steel manufactures; the latter comprise rails, sheets and plates, wire, builders' hardware, locomotives, typewriting and sewing machines, cash registers, pipes and fittings, stoves, etc.; the total value of these exports declined from $181,500,000 in 1907 to $145,000,000 in 1909.

Copper is found pure or in the form of ores. The United States is the leading copper producer, yielding about 400,000 tons, or more than half of the world's output. In 1907, Mexico was second in importance, followed by Spain and Portugal, Japan, Australia, Chile and Germany; the latter country imports large quantities of the metal. In 1909 the value of the United States' exports of copper ingots, bars, plates, etc., was $85,300,000.

Copper is an excellent conductor of electricity and the demand for it has greatly increased in recent years following the growth of electrical industries.

Bronze is a compound of copper and tin, brass a compound of copper and zinc.

Tin is obtained mainly—more than three-fourths of the world's supply—in the Straits Settlements (Malay Peninsula and the neighboring islands). It is found also in

Bolivia, Australia and in Cornwall, England. There are no large tin deposits in the United States, and most of the metal used is imported from Great Britain and the Straits Settlements. Tin is used mainly for the making of tin plates (sheet iron dipped in molten tin).

Zinc is found chiefly in Germany, Belgium and the United States. Galvanized iron is made by dipping sheet iron in melted zinc.

Lead is mined in the United States, Mexico, Spain and Germany; the production in the United States is not sufficient to cover the home demand and large quantities are imported from Mexico.

Gold is found in most parts of the world, but the richest gold fields are those of the United States, South Africa and Australia. The chief use of gold is for the making of coins, because of its peculiar characteristics: malleability, corrosiveness, value in comparison to bulk, the difficulty of counterfeiting, etc. Most civilized nations have adopted gold as their standard currency. Gold is also used in the jeweler's art, in dentistry, and for ornamental and decorative purposes. Gold is shipped from country to country to settle fiscal balances.

Silver is the second most valuable precious metal. It is used for coinage and in some countries as a monetary standard. Its reliability in this latter respect is impaired by fluctuations in value. Like gold, silver is used for many industrial purposes. France leads in the manufacture of gold and silver wares.

Various other metals—platinum, quicksilver, aluminum, etc.—are found in different parts of the world and are objects of international trade.

VIII. COUNTRIES AND THEIR PRODUCTS.

Economically we may classify the countries of the world into three groups:

(1) Those whose economic activity has achieved the highest degree of efficiency. They produce on a large scale

machine-made goods both for home consumption and for export and their financial and commercial relations connect them more or less closely with other countries. They appear as competitors in the world's markets.

(2) Those whose manufacturing industries have progressed sufficiently far to satisfy most of their home demand for factory products, but whose share in international trade in these products, as far as exports go, is comparatively small.

(3) Those whose industrial activities are mainly of an extractive character; they produce raw materials and semi-finished commodities, and their manufactures are either made by primitive methods at home or imported from abroad.

It is difficult to draw a demarcation line between these groups and it is just as difficult to assign some countries to any one of them; but such a classification permits one to view each country from a definite and a commercially significant standpoint.

The most important countries belonging to the first group are the United States, Great Britain, Germany and France; to these we may add Belgium, Netherlands, Switzerland and to some extent Austria-Hungary and Italy.

The United States is at present the greatest manufacturing nation of the world. According to the census of 1905, the value of our manufactured products was equal to $16,866,000,000. The estimated value of the manufactures of England in 1904 was $5,000,000,000; of Germany $4,666,000,000; of France $3,500,000,000; of Austria-Hungary $2,000,000,000; of Russia $2,000,000,000; of Italy $1,750,000,000; of Belgium $750,000,000.

The total value of manufactures entering international trade is, in round figures, $4,000,000,000, of which the United States supplies but $500,000,000, or 12½ per cent of the total.

In the second group of our division we may place Russia, Spain, Portugal, Sweden, Norway and other European nations not enumerated.

The countries of Southern and Central America, Asia, Africa and Australia belong to the third group. Their industries are in a formative period, some having advanced farther than others, but all showing the same characteristics: the export of breadstuffs, foodstuffs and raw materials, and the imports of manufactures.

Europe.

The chief manufacturing nations of Europe are grouped in the northwestern part of the continent; these are Great Britain, France, Belgium, Holland, Germany and Switzerland. Agricultural pursuits are predominant in the south and in the east: in Spain, Italy, Austria-Hungary, Roumania and Russia.

The first-named countries, washed by the Atlantic Ocean and the North Sea, possess many of the necessary elements which go towards making industrial and commercial greatness; if these elements are not found in the superabundance of natural resources (many materials being imported), then they are contained in the personal characteristics of their people, who are industrious, resourceful, inventive, daring in their colonial and commercial enterprises.

All these countries of dense population, whose energies are largely used for manufacturing and commerce as the most profitable and in some instances the only possible pursuits, import considerable quantities of food, raw materials and partially manufactured wares.

The countries of the south and of the east of Europe export cereals, other foodstuffs and raw materials. There are notable exceptions to this general statement; for instance, certain rapidly developing manufacturing industries of Italy and Austria and the gradual transition of Russia from a purely agricultural to an agricultural-manufacturing state, but the classification given is of value, because it indicates the main characteristics of trade and commerce in two vastly different sections of Europe.

The United Kingdom of Great Britain and Ireland leads the commercial nations of the world in the quantity and in the value of its foreign commerce. Its insular position, almost in the center of the northern, continental part of the world, near the markets of Europe and on the passage-way between European countries and North America, has to a very large extent contributed to its commercial significance.

The climate of the British Isles is mild and equable and most of their soil can be used for purposes of agriculture, the highlands of Scotland having the largest amount of unproductive area. Notwithstanding this the population of Great Britain finds its chief occupation, not in agriculture, but in manufactures, shipping and commerce, and the wealth of the country is based not so much upon the labors of the husbandmen as upon those of the coal-miner, the worker in the mills and factories, and the sailor.

England's agriculture is of a most intensive character, but it produces far from a sufficient amount to support its population; consequently, England imports wheat and other cereals. Great Britain with its large army of industrial laborers and a comparatively small number of farmers, with its free trade policy which keeps the price of grain down and thus favors a large consumption of this staple, has been for a long time a converging point for thousands of cargo laden ships, which unite its harbors, its factories, its mining camp with the wheat fields of the new and the old worlds.

Great Britain is, also, one of the best consumers of foreign raw materials, its own comparatively small territory not providing a sufficiently broad foundation for the huge superstructure of its blast furnaces and rolling mills, cotton and woolen factories, etc. Some materials like cotton, for instance, cannot be produced in England at all; others, like iron ore, are not present in sufficient quantity or lack the necessary qualities; others could be obtained at home, but it is more profitable to import them and to

devote the capital, the energy and the skill of the country upon elaborative processes, thus adding many fold upon the original investments represented in the purchase of the raw material.

The chief exports of Great Britain and Ireland are cotton, woolen, linen and jute manufactures and yarn, coal, metals, machinery, hardware and cutlery; the principal articles of import include grain and flour, meat and dairy products, raw cotton and wool, wood and timber, petroleum, sugar, tea and coffee, fruits and hops, eggs, tobacco, etc.

France with a territory less than Texas has almost as many farms as the United States; this goes to show that the acreage of individual farms is small there.

One-half of the French soil is arable; the soil is fertile and productive, and grain fields, yielding abundantly to close methods of farming, cover one-fourth of the republic. Wheat is the largest crop, but notwithstanding the size of the wheat yield, from 30 to 35 millions of bushels are annually imported. Next to wheat, oats is the leading crop.

Sugar beets are raised extensively on the plains of the North, France being one of the largest beet sugar producers. Of importance are the crops of chestnuts, walnuts, olives, plums, cider, apples and mulberry leaves.

France leads the world in wine production; grapes are cultivated mostly in the southern and eastern provinces, whose soil and climate are well adapted to the industry. French wines, because of their superior quality and their reputation, find a ready market in Great Britain, in all north European countries, in the United States and other American republics as well as in the Orient.

The fishing industry of France employs close to 100,000 people, herring, oysters, sardines, mackerel, sprats and tanny fish being the main products.

While France has important coal beds, they do not yield a sufficient amount for the needs of the country and it imports large quantities of this mineral from its neigh-

bors, Belgium, Germany and England. Iron ore is plentiful, but in many cases it is far from the coal deposits; the most important developments in the production of iron and steel have taken place at Creuzot and St. Etienne, where the two minerals are found in proximity; the other two important iron and steel centers are Marseilles and Bordeaux, their location permitting the use of waterways for the transportation of coal and iron.

France excels in the making of wares requiring artistic skill, but in the production of cheap commodities, which are the result of the extensive use of modern machinery and of elaborate business organization, it is far behind Great Britain, Germany and the United States.

Manufactures of gloves and other fancy leather goods, of jewelry, perfumery, porcelain, millinery and dresses are some of the characteristic industries in and around Paris, the capital of the country and its intellectual and financial center.

Textiles, if we include under this heading, the making of cloths, lace, ribbons, etc., employ close to 2,000,000 persons; the goods are noted for their fine texture and superior quality.

The principal imports of France are wool, raw silk and raw cotton, coal and coke, oil seeds, timber and wood, cereals, hides and furs, wine, ores; the chief exports consist of silk, cotton and woolen textiles, raw wool and yarn, raw silk and yarn, wine, leather and leather goods, linen and clothes, skins and furs, chemical products, cheese and butter, sugar and spirits.

Germany.—Since the establishment of the German Empire in 1871, the country has undergone a tremendous transformation. Out of agricultural states torn by political conflicts, there has emerged a united people, conscious of its strength, full of vigor and of belief in its destiny. The nation of scientists and philosophers, poets and musicians, of sturdy peasants tilling the sandy soil and of soldiers trained on bloody battlefields has turned its at-

tention to industry and commerce; the results are marvelous.

The struggles of the past with man and nature have laid their impress upon the character of the German workingman. He is deeply in earnest in whatever he does, steadfast and thrifty. He knows how to utilize to the utmost every resource at his disposal, to turn to advantage every opportunity. Through his toil little plains, covered with scrub pine were transformed into grain fields, orchards and gardens; shallow unnavigable streams were canalized and impressed into the service of commerce; industrial centers were planted in the midst of seemingly valueless stretches of barren land.

The German Empire is a confederation of twenty-six states, occupying 211,000 square miles in the central part of Europe. Its position in the north temperate zone makes it a country of forests, fields and pastures. Scientific methods of cultivation have reduced the percentage of unproductive soil to about one-twentieth of the total area, arable land equaling 48.7 per cent, hay and pasture 20.3 per cent and forests 25.7 per cent.

The chief cereal crops of the Empire are rye, oats, wheat and barley, the first two leading; Germany because of its climatic conditions and the nature of its soil (poor and sandy in most parts of Prussia), is more adapted to the raising of hardy plants, like rye and oats, than to the cultivation of wheat. Notwithstanding high duties, large quantities of the latter are imported, the imports gaining in volume and value because of the rapid growth of population and its concentration in industrial and commercial centers.

Besides cereals, the products of the German soil consist of potatoes, hay, clover, sugar, beetroot, wine grapes, hops, tobacco and fruits.

Germany is rich in minerals, her output being now larger than that of any other country in Europe, except Great Britain. The mineral deposits include coal, iron ore, copper, silver, lead and zinc.

The forests supply fuel, as well as material for building purposes and for a great number of manufacturing industries. The chief woods of Germany are oak, beech, spruce, walnut and birch.

Manufactures are varied; the most highly developed are iron and steel, textiles, sugar refineries, breweries, production of chemicals, of leather goods, etc.

Raw materials and foodstuffs constitute the largest item of imports, the first representing about 50 per cent, the second 35 per cent of the total; manufactured commodities, particularly textiles, metallic wares, machines, chemicals, colors and leather goods, predominate in the exports.

The United States leads in the value of imports, followed by Russia, Austria-Hungary, Great Britain, France and Argentina. Most of the exports go to Great Britain, the United States, Austria-Hungary, Switzerland and Russia.

Austria-Hungary is pre-eminently a country of tillers of the soil and raisers of stock, agricultural industries giving employment to over one-half of the population of Austria and more than two-thirds of that of Hungary. Austria, however, because of its vast store of mineral wealth has a number of manufactures, the most important of which are textiles, metal working, machine making, glass industry, sugar refining, and brewing. The population in many of the industrial districts of Austria is possessed of artistic ability, has deftness and skill, and the products of her factories (Bohemian crystal and porcelain, etc.) compete favorably with those of any other country; but manufacturing in general has been greatly retarded. The economic life of the country has been hampered by antagonism amongst the various nationalities comprising the dual monarchy, by race animosity, hereditary distinctions and jealousies, church influences, etc.

Labor is cheap and because of this, new methods and machinery are introduced very slowly, both in the field and

in the shop; the flour milling industry is a notable exception; Hungarian mills use the best mechanical appliances and produce flour of high quality which is sought by other European nations. Oats, rye and barley are the principal crops of Austria, while the Hungarian plains produce much wheat and corn. Other agricultural products of the Empire include beet sugar, tobacco, wine, grapes. Good grades of wine (Tokay from Hungary) are exported, but imports exceed exports. Poultry raising is an important commercial item, over two billions of eggs being exported annually.

A valuable economic asset are the forests; so also are the pastures and meadows on which graze millions of cattle, horses and sheep.

Most of the commerce of Austria-Hungary is carried on with adjoining states, the value of exports from and imports into Germany being about one-half of the total foreign trade of the Kingdom. Great Britain is the next best customer of Austria-Hungary, followed by Italy, Russia, Turkey and Roumania.

Foreign commerce of Austria-Hungary suffers because of lack of seacoast, its only outlet being a narrow strip on the Adriatic.

The chief exports are sugar, eggs, wood and woodwork, corn flour, wheat, glass and glassware, cattle, leather goods and coal; the imports consist of raw cotton and wool, cotton and woolen goods, silk and silk manufactures, hides, skins and prepared leather.

Switzerland—a small inland country of lofty snow covered mountains, deep green fertile valleys, beautiful lakes, streams and waterfalls—has achieved a high position as a manufacturing and commercial nation; this, notwithstanding the fact that it lacks mines of coal and iron, has no seacoast and is hedged in between mountainous walls.

One-half of the country lies above the zone of agriculture and only one-sixth of the area can be cultivated. Switzerland imports considerable quantities of wheat,

partly to supply the needs of her own population, partly for tourist trade.

Dairying is the most important branch of Swiss agricultural and pastoral industries; it prospers because of the abundance of hay and pasture lands on the mountain slopes, pastures kept perennially green by the melting snow. Switzerland exports cheese, condensed milk and milch cows; imports beef cattle.

Manufactures are carried on either in small factories or as hand crafts and rely for their competitive qualities upon the skilled, technically educated and at the same time inexpensive labor. The chief industries are textiles (fine silk and cotton fabrics, trimmings and embroideries), watch making, wood carving, production of chemicals, of leather goods, of scientific instruments, metal works and straw plaiting.

The chief imports of Switzerland are cereals and other food substances, silk and cotton goods, raw materials; the exports are nearly all manufactures: silk and cotton tissues, metals, etc.

Switzerland each year attracts thousands of tourists from the United States and Europe, who enrich her to the extent of many millions.

Most of the Swiss manufactures find purchases in the near-by markets of Germany, France, Austria-Hungary and Italy; considerable quantities are shipped to the United States; in 1909 the value of the latter was $23,830,000, while the imports from that country were only $75,000.

Belgium with a territory of 11,373 square miles has a population of about 7,500,000, thus being one of the most densely populated states in the world. About 49 per cent of the area is arable land, 26 per cent is hay and pasture, 16.5 forest and the rest is unproductive.

Oats, rye, wheat and potatoes are the leading crops, but the amount of breadstuffs produced does not cover the home demand and wheat is an item of import. Sugar

beets are grown in large quantities, and some sugar is exported; flax and hemp are also farm products of some importance. Poultry is raised throughout Belgium and furnishes eggs and young fowls for the markets of England and northern France.

The chief industries of Belgium are mining and manufacturing. Belgium has rich coal deposits, mining annually over 23,000,000 tons of coal; one-fourth of this amount is exported to France, the rest is consumed at home. The quantity of iron ore found in the country is insufficient for its industries, and ore is therefore imported. Abundant coal supply, dense population, skilled labor and available capital make Belgium a pre-eminently manufacturing and commercial state.

The chief exports from Belgium are machinery, iron and steel, flax, woolen and cotton tissues, diamonds (re-exportation after cutting), glass, raw hides, sugar, while imports consist of wheat, timber, raw wool, flax, cotton, and colonial goods.

France, Germany, Great Britain, the United States and the Netherlands are the leading exporters from and importers into Belgium, the United States shipping wheat, corn, cotton, meats, petroleum, tobacco, to the value of $45,093,000 (figures given for 1909).

The Netherlands is mainly an agricultural and a commercial country. A large portion of its surface is marshy, but the land that is arable, is very fertile; this is particularly true of the area that has been reclaimed from the sea. The soil is moist there and excellent breeds of cattle graze on its rich pastures, yielding abundantly milk, either sold directly or manufactured into butter and cheese.

The principal crops are rye, potatoes, oats, wheat, sugar beets and pulses. Truck gardening and the growing of flowers furnish articles of export to many large cities of continental Europe and Great Britain.

Mining is of little importance owing to the lack of natural deposits; this absence of minerals hinders the manufacturing development of the country. Cotton, linen and woolen factories, sugar refineries, brewing and distilling (curaçao, gin), the making of earthenware, furnish some products for export.

The Netherlands stands in the front rank as a commercial nation, being the fifth country in the value of its foreign trade; a great deal of this commerce is transit from and to Germany.

The Netherlands imports and exports large quantities of iron and steel, copper, cereals, flour, etc.; the exports of her home products consist mainly of butter, cheese, meats, sugar, oleomargarine and flax, while the imports for home consumption are cereals and flour, coal, mineral oil, coffee, etc. Most products are shipped to Prussia (50.3 per cent in 1907), Great Britain and Belgium; the United States, taking 3.9 per cent of the total exports, occupies the fourth place; 10.9 per cent of imports for home consumption come from the United States.

Sweden occupies the eastern part of the Scandinavian Peninsula. Forests cover about one-half of the land area of Sweden and their products form a staple export. Only 9 per cent of the country is under cultivation and about 3 per cent is pastures and meadows. The chief crops are oats, rye and barley; considerable quantities of corn and flour are imported.

Mining is one of the leading departments of Swedish industry, particularly mining of iron ore. In 1907—4,480,000 tons of iron ore were extracted; however, metallurgical industries are not developed, and most of the ore (3,521,000 tons) is exported either to Great Britain or to Germany.

Timber and woodwork furnish the chief articles of export, other articles in the order named being minerals, metal goods and machinery, live animals and animal products, paper, etc.

The imports consist of coal and other minerals, metal goods and machinery, raw textile material and textile manufactures, cereals, colonial wares.

The principal countries with whom Sweden trades are Great Britain, Germany, Denmark, the United States, Norway.

Norway, of whose total area 75 per cent is unproductive, is a high tableland of forbidding desolate aspect, with mosses and lichens as its only vegetation; over 20 per cent are under forests, mostly the coniferous pine and spruce; the rest, less than 4 per cent, is under crops and grass.

Fisheries are very important, the main catch consisting of cod, herring and mackerel. Practically all the ports of Norway are fishing ports. The population of Norway has always been necessitated to depend upon the sea as its means of support, the country's barren soil and its rigorous climate preventing agricultural, pastoral or any other industrial pursuits.

Norway possesses a very large merchant marine, the largest in the world in proportion to its population; Norwegian steamers and sailers may be found on most seas carrying the goods of many nations.

The chief exports of Norway are timber and wooden goods, fish, paper; imports consist of breadstuffs, particularly rye, of tallow, oils, tar and rope, coal, metals and metal manufactures.

Denmark occupies the peninsula of Jutland and a few islands between the North Sea and the Baltic. Of the total area about 40 per cent is under cultivation and 40 per cent in pasture and meadow.

Dairying and poultry raising are the most important occupations, and butter, eggs and meats form the chief items of its export trade. The production of milk, butter and cheese is placed on a most scientific and sanitary basis, and these products find a ready market wherever they are sent. The same is true of the egg industry, controlled by

co-operative organizations whose members are pledged to deliver none but freshly laid eggs.

Oats, barley and rye are the leading cereals raised, the latitude being somewhat high for the successful cultivation of wheat; beet roots are grown and in 1907 about 53,000 tons of beet sugar were produced.

Manufactures are few and of comparatively little significance.

The chief imports consist of cereals, provisions, metals, hardware, coal, textile manufactures and colonial goods.

The United States' exports to Denmark have fallen from $23,384,000 in 1907 to $17,522,000 in 1909, while the imports show an increase: $1,125,000 in 1907 against $1,625.-000 in 1909.

Italy, although surrounded by the sea (Mediterranean) has hot and dry summers in the central and southern parts of the country, necessitating artificial irrigation. In the north, the rainfall is abundant and evenly distributed throughout the year; it is there that agriculture reaches its highest development. About 70 per cent of the Italian soil is classified as productive.

The southern latitude of the country and its varying altitude (the Apennines traverse the peninsula and the Alps cap it) permit the growth of tropical as well as of temperate region crops. The latter, like wheat, are not sufficient to supply the home demand.

Olives, oranges, lemons are extensively cultivated and large quantities of olive oil and citrus fruits are exported.

The leading single industry of Italy is the production of raw silk, large quantities of which are bought annually by European and American silk manufacturers.

Italy produces a great deal of wine, inferior in quality to the French wines, but forming an important item of export.

The country is not rich in minerals; some inferior grade coal (lignite) is mined, but most of the fuel

must be imported. Sulphur is found in Sicily, and is exported to the extent of approximately $6,000,000 a year. Of great value are the quarries of Italy, yielding some of the best marble for artistic purposes.

Manufactures have been undeveloped because of the high price of coal, practically all of which must be imported; but they are becoming an important factor in the economic life of the nation. Water power is abundant and it is being rapidly harnessed to serve industry and commerce, manufactures finding, in a densely populated country like Italy, adequate labor supply and good local markets. Especially marked has been the growth of textile industries (silk, cotton, woolen, linen), and the production of chemicals.

The exports, except those enumerated above, consist of cotton and silk tissues, raw hemp, cheese and eggs, fresh and dried fruits, nuts (figs, almonds, etc.), rice, straw and straw hats, raw and sculptured marble, alabaster and coral.

The chief imports are raw cotton, coal and coke, boilers and machinery, wheat, wrought iron, steel and other metals, railway carriages, scientific and electrical instruments, timber, silk and wool, hides, coffee, etc.

Most of the imports come from Great Britain, Germany, the United States, France, Austria-Hungary and Russia; the exports go to Switzerland, Germany, the United States, France, Austria-Hungary, Argentina.

Spain and Portugal occupy the Iberian Peninsula. Spain is by far the largest of the two kingdoms both in area (190,050 square miles) and in population (about 20,000,000). About 80 per cent of its soil is classified as productive, and is devoted to cereal raising, gardening, fruit growing, grape and olive culture, and grazing.

Spain is rich in minerals, but the mineral resources are only partially developed, the most important minerals mined being iron, copper, coal, lead, zinc and mercury;

Spain supplies about one-half of the world's output of quicksilver.

The greater part of Spain is tableland surrounded everywhere but in the west by mountains and possessing somewhat unfavorable climatic conditions; high temperature coupled with inadequate rainfall prevents the growth of little other vegetation except herbs and shrubs. However, artificial irrigation opens possibilities for the cultivation of fruits and vegetables, nuts and cereals, and many parts of Spain are thus irrigated. The northwest of Spain, with a greater rainfall, produces corn, while some of the more fertile parts of the plateau yield excellent wine.

The only valuable product of Spanish forests is cork.

Spanish wool (short staples) is considered as the best in the world.

Manfactures of more than local significance are metallurgical works, cotton and woolen mills, paper mills and glass-making factories.

The exports are minerals, glassware and pottery, metal and metal manufactures, foodstuffs, etc.; the imports consist of cotton and its manufactures, machinery, vehicles and vessels.

Portugal.—Over 43 per cent of the area is unproductive and 17½ per cent is under forests; the remaining territory is pasture and land devoted to the cultivation of cereals, pulses, and fruit.

The main cereal crops of the country are corn and wheat. Wine is produced both for domestic consumption and for export; the same is true of olive oil, oranges and figs.

There is considerable mineral wealth in Portugal, but valuable mines remain unworked because of lack of fuel and of good transportation facilities.

The imports consist of iron and steel manufactures, cotton and woolen goods, coal, codfish, sugar, hides and skins; the exports are wine, corn, preserved fish, fruits, copper ore, etc.

The Russian Empire occupies one-seventh of the land surface of the globe and has a population of over 150,000,000. The entire region presents a great compact land mass, stretching from the Baltic Sea and the frontiers of Germany and Austria-Hungary to the Pacific, and from the Chinese Empire, Persia and the Black Sea to the Arctic Ocean. It lies within the temperate and frigid zones.

Russia in Europe is topographically a great plain, the only mountains being the Caucasian and the Crimean in the south and the Ural in the east.

The northern part of the country is swampy, frozen for most part of the year, with no vegetation but moss and lichens; farther south is the forest belt of firs, pines and oaks, yielding valuable material for building purposes.

South of this belt lies the monotonous expanse of Russian steppes and fields which, although open to the winds sweeping from the north and subject occasionally to severe droughts, are capable under proper system of cultivation, of producing abundantly oats, rye, barley, wheat, and other cereals.

Notwithstanding the ignorance and the lack of energy on the part of the Russian peasant, even at present, the black earth of Russia makes the country one of the leading breadstuff producers in the world.

Besides cereals, flax, hemp, potatoes, sugar beets and tobacco are raised in different parts of the Empire.

Russia possesses millions of horned cattle, sheep, horses, goats and pigs, yielding large quantities of milk, butter and cheese, tallow, wool, hides and leather, hair and bristles.

Poultry raising furnishes billions of eggs both for home and for foreign consumption; about 55,000,000 eggs are exported annually.

The mineral resources of Russia are vast and varied, and the mining industry is steadily increasing in importance. The chief minerals mined are gold, platinum, silver, coal, copper, iron ore, zinc, lead and petroleum.

Manufactures have become sufficiently prominent an element in the economic life of the country to supply most of the home demand for finished goods; undoubtedly the demand for such commodities is not so proportionate to the size of the Russian population, if a higher standard of living should prevail. A deep gulf exists between a comparatively insignificant part of the Russian people living in a few large cities and the great, inert, widely spread mass of the moujiks (peasants). The first strive for material as well as intellectual progress, they live the full life of civilized men, while the second exist with needs and wants that do not pass beyond the narrow walls of their huts and the patches of ground they cultivate.

The government of Russia is paternal; it owns and operates two-thirds of the railway system, most of the telegraph and telephone lines, valuable mines; it buys all the alcohol required for national consumption and sells the liquor consumed by the people. One-third of all the land and two-thirds of the forest are still under its immediate control.

The leading manufactures of national importance are cotton, linen and woolen fabrics, the products of sugar refineries, of breweries and distilleries; mills are centered in Poland, in and around Moscow and in a few other industrial districts of Russia. Of the fisheries the most important and valuable are those of the rivers and of the Caspian and Black seas.

The imports of Russia consist of cotton, wool, hides, leather, chemicals, colors, coal, coke, unmanufactured metals, tea, coffee, alcoholic beverages, fish, fruits and nuts, machinery, metal goods and textiles.

The exports enumerated in the order of their value are: cereals and flour, timber and wooden goods, flax and hemp, eggs, dairy produce, petroleum, furs and feathers, sugar, fowls and game, bristle and hair, wool; some manufactures

are exported, principally to Asia, but they play a small role in Russia's export trade.

The exports to the United States in 1907 were $7,727,000, as compared with $290,000,000 to Germany or $228,000,000 to Great Britain. Germany leads in imports (in 1907—$311,000,000), followed at a great distance by the United Kingdom ($114,000,000) and the United States ($53,000,000).

The Balkan countries occupy the Balkan Peninsula and some of its contiguous territory. They consist of Roumania, Servia, Bulgaria, Montenegro, European Turkey and Greece. In all of them agricultural and pastoral pursuits predominate; mining, although the mountainous territory is rich in minerals, is little pursued, and manufactures, barring the making of carpets in Turkey, are of a purely local character.

Roumania raises large crops of corn and wheat, the first for home consumption, the second for export; barley, rye, oats, hemp and colja are some of the other crops. The chief minerals found are petroleum and salt. The exports consist of cereals, animal products, wood and mineral fuel, imports of textiles, metal ware, chemicals and drugs, etc.

Bulgaria. The soil of Bulgaria south of the Balkan Mountains is fertile, the climate warm, and such products as grapes, cotton, tobacco, rice, roses (attar of roses exported) are cultivated; the northern portions of the kingdom produce wheat and present excellent pasture land for large herds of sheep, cattle and horses. Agricultural methods are primitive.

Servia resembles Bulgaria in its topography, climate, products and the occupations of its people. It exports prunes and preserved plums, corn, wheat, barley, meat, hides, eggs; it imports textiles, iron and steel, machinery, sugar and salt.

European Turkey is but a fraction of the Great Ottoman Empire. Its industrial development has been retard-

ed because of political conditions, and it is expected that the overthrow of absolutism and the rule of the Young Turks will have a stimulating effect upon industries and commerce. Turkey with its tributary states has an area of 1,565,000 square miles and a population of 35,000,000; it includes Asia Minor, Armenia and Kurdistan, Mesopotamia, Syria, extensive coast strips in Arabia, Tripoli and Egypt. The soil of the Turkish possessions is fertile and the climatic conditions are good. Tobacco, cereals of all kinds, cotton, grapes, nuts, almonds, olives, all varieties of fruit grow abundantly. Coffee and silk plantations are being extended. The large forests contain firs, pines, oaks and cedars. Of the minerals the most important are copper, coal, zinc and lead.

Greece, the most southern of the Balkan countries, raises subtropical products, figs, olives, wine and currant grapes, silks, honey and tobacco. Currants are the chief article of export.

North America.

Alaska, a territory of the United States, occupies the northwestern part of North America. The area of the territory is about 590,000 square miles, and the population approximates 64,000. Alaska has considerable timber resources, mostly spruce, hemlock and cedar; but the lumbering industry is not developed. Mining, and seal and salmon fisheries are the leading occupations of the people. The output of gold reaches $20,000,000 a year; copper is the next important mineral extracted; there are also deposits of tin ore, lead, coal, petroleum, gypsum, and marble, some of which are worked. The annual catch of salmon is valued at $9,000,000.

The southern parts of the territory, especially near the coast, are not unsuitable for agricultural pursuits; the climate there is more equable than on the eastern coast of the continent.

Canada is the most important of Great Britain's colonies of settlement. In territory it is somewhat larger than the United States, but a considerable part of the country, being too far north, lies in a zone unfit for agricultural pursuits. Vast tracts of land in the more southern regions have favorable climate and fertile soil; they are well adapted to the growing of temperate region cereals: wheat, oats and barley, as well as for stock raising and dairying. The eastern (Atlantic coast) and western (Pacific coast) parts of Canada have copious rains, while the climate of the Great Central Plain is continental, with wide ranges of temperature and comparatively little rainfall.

About three-fourths of the population of Canada are farmers, agriculture being carried on in all the Canadian provinces. Cereal raising is particularly prominent in Saskatchewan, Manitoba, Ontario and Quebec; these are rapidly becoming great wheat-producing regions of the world; in the interior west are the live stock ranches with their herds of cattle and sheep; the chief occupations in British Columbia are mining, cereal and fruit raising and fishing, while in the east (Quebec, New Brunswick and Nova Scotia) diversified farming and dairying are carried on, large quantities of butter and cheese of excellent quality being produced. The latter forms an important item of Canadian export.

The forest belt of Canada extends in an unbroken line from the Atlantic to the Pacific and gives the country the largest forest area possessed by any nation in the world; spruce, pine, balsam fir, maple, hemlock are the chief varieties, to which may be added such hardwoods as birches and aspens.

Besides yielding timber and other tree products, the forests of Canada have a commercial value as the hunting ground of the trapper, Canada being one of the main producers of furs.

The principal minerals mined are coal, copper, nickel, silver and gold, lead, asbestos and petroleum, the first five being by far the most important.

Fisheries are a valuable economic asset of Canada, salmon, cod, herrings, lobsters and mackerel being the principal catches.

There are about 16,000 manufacturing establishments in Canada situated mostly in Ontario and Quebec; in 1905 the value of the products reached $718,000,000.

The exports of Canada consist of wood and wood pulp, wheat and wheat flour, cheese and butter, bacon, silver, gold, copper and coal, cattle and sheep, various fish, fruits, hides and skins, furs and leather; the imports are iron and steel manufactures, coal and coke, textiles, provisions, tea, spirits, oils, glass, etc.

The bulk of Canadian imports is furnished by the United States, this notwithstanding a preferential tariff in favor of British products. In 1906 the value of imports from the United States was $176,000,000, from the United Kingdom $69,000,000; in the value of exports conditions are reversed; Great Britain having taken in 1906 $133,000,000 of Canadian products, the United States $98,000,000.

Newfoundland is politically a British colony distinct from the Dominion of Canada. Fishing is the chief industry and dried cod is the principal item of export, other articles exported being seal oil, canned lobsters, iron ore, and copper. Fine pine forests exist in the northern part of the country, and large saw mills have been established.

The imports include textiles, flour, salt pork, coal, hardware and machinery.

The West Indies.—Of many West Indian Islands only two, Cuba and Haiti, the latter divided between two states, are independent; all the other islands are colonies of European nations: Great Britain, France, Denmark and Netherlands.

The islands, extending between the Atlantic Ocean on one side and the Caribbean Sea and the Gulf of Mexico on the other, vary in size from Cuba, which has an area of 44,000 square miles, to tiny rocks just rising above the sea. The climate is tropical, most of the land fertile.

Cuba, the largest and richest of the West Indies, is well adapted to the cultivation of all tropical fruits and vegetables; its staples are sugar cane and tobacco, although cacao, coffee, corn, potatoes, bananas, pineapples, oranges are also grown.

The forests of Cuba contain valuable cabinet woods, such as mahogany, cedar, dyewoods, fibers, gums, resins and oils. The mineral resources include iron ore, copper, manganese, asphaltum and salt.

Of the cultivated area more than half is under sugar, and about one-tenth under tobacco. These two products form the bulk of the Cuban exports, the other items being minerals, fruits and wood. The imports consist of manufactures: textiles and others, iron and steel goods, provisions.

The United States is the principal market for Cuban exports and it supplies about one-half of the island's imports, other importing countries being Great Britain, Spain, Germany and France.

Porto Rico, a colony of the United States, is separated from Cuba by the island of Haiti. It produces large quantities of sugar and coffee for export, its other products being those of diversified farming.

The forests of Porto Rico contain cedar, ebony, sandalwood and other building material as well as dyes and medicinal plants.

The British West Indies include the Bahamas, Jamaica, the Bermudas.

Besides fruit growing, collecting of sponges is one of the resources of the Bahamas, while Jamaica produces sug-

ar, rum, coffee and ginger. The Bermudas manufacture and ship millions of bags to the United States.

The Dominican Republic occupies the eastern and larger part of the island of Santo Domingo or Haiti; the Republic of Haiti occupies the western part. The island, the second largest of the Antilles, lies between Cuba and Porto Rico, and, because of numerous mountain ranges, plateaus and valleys, it has a variety of climate and products, nearly all of the fruits of the tropics and many of the temperate zone growing there successfully. Agriculture is the leading occupation in both republics and the chief exports are cacao, sugar, coffee and tobacco. Imports consist of cotton, iron and steel, wheat flour, rice, provisions, oils, vegetable fibers.

The foreign trade is carried on mostly with the United States, Germany and France.

Mexico is the third largest of the American republics as regards population (13,600,000) and the fourth largest as regards territory (767,000 square miles).

The situation of Mexico, partly in the temperate and partly in the tropical zone and the varying altitudes of its valleys, plateaus and mountain slopes, give it a diversity of climate and products.

Mining is the leading industry, Mexico having abundant deposits of silver, gold, copper, lead and other metals. It is estimated that the value of mining properties held by foreign companies and individuals reaches the amount of $350,000,000.

Corn is the chief cereal crop; other products of the soil include cotton, henequen, wheat, sugar and molasses, coffee, beans and woods.

The extensive forests of Mexico contain timber suitable for building, and for furniture making, dyewoods, medicinal plants, rubber trees, etc.

The bulk of the country's exports consists of raw materials, minerals, henequen, coffee, cacao, vanilla, tobacco and

sugar. Imports are machinery and apparatus, provisions, textiles, animal substances, chemical products, etc.

The United States is the best market for Mexican products and is, also, at the head of its list of importers. In 1909 the value of exports to the United States was $47,712,000, and the value of imports from there $49,793,000.

Central American Republics.

Guatemala, the northmost of the Central American republics, lies, barring a small strip along the coast, at an altitude from 4,000 to 11,500 feet. The mountain range which traverses the territory forms several fertile valleys, well adapted for the growing of both subtropical and temperate region products. Coffee is the chief article of production and export, other commodities exported being hides, bananas, sugar, rubber, woods and chicle, used in the making of chewing gum. Imports consist of textiles, iron and steel manufactures, electrical material and apparatus, provisions and beverages.

Germany is the best customer for the Guatemalan products, while the United States occupies the first place as an importer.

Salvador is the smallest and the most densely populated of all the American republics. As in Guatemala, coffee is the leading article of production and of export, with minerals as second. Other exports are cacao, rubber, sugar, indigo, tobacco, "Peruvian balsam" and bananas. The principal imports are cotton, silk and woolen manufactures, hardware, flour, etc. The forests of Salvador contain cabinet and hardwoods, mahogany, cedar, walnut, dyewoods, gums and resin but these resources are but little exploited.

The United States takes the largest amount of Salvador's exports, though it is exceeded by Great Britain in the value of imports.

Nicaragua has the same characteristics of topography and climate as the other Central American republics. A

mountain range crosses its territory reaching a considerable height and giving it varying altitudes; a diversity of climates and products is the result.

Coffee, bananas, gold, rubber, mahogany, cedar, cattle, hides and cocoanuts are amongst the chief exports.

The mountains contain many minerals and precious stones; the forests consist of various species of trees furnishing oils and extracts used for medicinal purposes. The United States leads both as an importer into and an exporter from the republic.

Honduras with fertile valleys, magnificent grazing land for cattle and mountains possessing large mineral resources has not been as yet adequately developed.

The exports of the country consist of bananas, coffee, cocoanuts, mahogany, rubber, sarsaparilla, silver, hides and cattle; the imports include textiles, iron and steel products, machinery and foodstuffs. The United States has the bulk of the Honduras foreign trade.

Costa Rica grows coffee, tobacco, sugar, rice, cacao, indigo. Its forests yield rubber, cocoanuts and bananas. The latter form the chief item of Costa Rico's exports, followed by coffee, gold and silver; some cacao, woods, hides, skins and tortoise shells are also exported. Imports are fabrics, flour, live stock, machinery.

The United States is the leading importer into and exporter from Costa Rica.

Panama.—The Isthmus of Panama, which connects Central and South America, comprises the Canal Zone and the recently formed Republic of Panama. The latter has fertile soil and climatic conditions favorable to the growth of tropical products. The mountain slopes are covered with dense forests of cabinet, building and dye woods, and the plains offer excellent pasture ground. Deposits of coal, copper and gold are known to exist, but they are not mined.

Exports consist of bananas, hides, rubber, cocoanuts, indigo, cacao, pearls, mahogany.

South America.

Argentina has an area of 1,136,000 square miles and an estimated population of 6,400,000, of which about 1,150,000 live in the capital of the country—Buenos Aires.

About one-third of Argentina may be used for agricultural or pastoral industries, the remaining two-thirds being mountain, lake, river or arid regions. In 1908 of the available area only one-seventh (39,500,000 acres) was under cultivation. Wheat, corn, linseed, flax and oats are the leading crops and they figure prominently in the export trade of the country.

Argentina has large quantities of cattle and sheep; stock raising is carried on under careful governmental regulation, the most scientific methods of selection and breeding being applied; the products of the slaughtering and freezing establishments are shipped across the Atlantic to Great Britain and other countries.

The republic presents a variety of climate and products, ranging from tropical in the north to arctic in the south; however, the largest part of its territory lies within the temperate zone, the latter fact explaining to some degree the economic conditions in Argentina and its present rapid industrial development.

Upward of $1,200,000,000 of British capital is invested in the country, particularly in railways and government bonds.

Sugar, tobacco and grapes are grown, but these industries are yet in their infancy. Mineral resources are not exploited because of lack of available capital, poor means of transportation and high cost of fuel.

The chief imports of Argentina are textiles, iron and other metals, cars and carriages, building materials, pottery, foodstuffs and beverages. Great Britain occupies a commanding position both as a purchaser from and a seller to Argentina, about one-half of the foreign trade of the re-

public being with the United Kingdom. In 1908 Argentina's commerce amounted to $639,000,000 of which $273,000,000 were imports and $366,000,000 exports; the United States furnished about one-seventh of the first and took about one-thirtieth of the latter.

In **Uruguay** most of the land is used for pastoral purposes, cattle breeding (7,000,000 heads) and sheep raising (18,000,000 heads) being the chief occupation of the people.

Agricultural industries are not very important but the area under cultivation is being gradually extended. The leading crops are wheat and linseed; some wine is produced, also tobacco and olives.

The exports consist mainly of animal products, while the imports include raw and manufactured materials, textiles, foodstuffs, beverages, etc. The imports from the United States are smaller than those from Great Britain, Germany or France. In 1909 the total of our trade with Uruguay was about $7,000,000 divided almost equally between imports and exports.

Paraguay.—Stock raising, because of abundance of good grazing land is carried on extensively; hides, jerked beef and other animal products are exported. Yerba maté, or Paraguay tea, tobacco and oranges are also articles of export. Immense forests furnish valuable timber, both hard and soft, some of which is shipped to the neighboring countries and to Europe.

The chief imports are textiles, provisions, hardware, spirits and haberdashery.

Trading relations with the United States are insignificant, averaging $100,000 a year.

Brazil, with a territory about equal to that of the United States and a population approximating 20,000,000, is a pre-eminently agricultural country.

Coffee is by far the principal crop, furnishing the chief article of export. In 1908 the enormous quantity of 1,116,000,000 pounds was exported, valued at $115,000,000. Oth-

er crops include cacao, maté, tobacco, sugar cane, cotton, all of which contribute to the foreign trade of the country. Cereals, pulses, fruits and vegetables are grown for home consumption.

The wealth of the Amazon forests has been hardly touched, the only areas exploited to any extent being those under rubber trees; rubber is shipped to all parts of the world, the value of the rubber export being about one-half of that of coffee.

Pastoral industries, notwithstanding an abundance of grazing land, are in an undeveloped condition; however, live stock is being introduced and native breeds are being improved by crossing them with foreign animals. As yet Brazil imports butter and cheese, but this will hardly last much longer.

Very little fuel is mined, but because of the wider application of electricity to manufacturing a number of factories have been recently established which produce many commodities formerly imported. They include the making of cottons, shoes, hats, clothing, candles, soap, furniture, beer, etc.

The chief imports of Brazil are wheat and wheat flour, coal, cotton, fabrics, codfish and wines.

Brazil's best customer is the United States which in 1909 took $98,000,000 worth of its exports; American exports to Brazil fall far below those of Great Britain or Germany; in 1909 they were $17,527,000.

The Guianas (British, Dutch and French) are of little value commercially. The most important of the three is British Guiana with rich gold deposits and extensive sugar plantations and factories. Besides gold and sugar, its exports consist of diamonds; the imports are provisions, textiles, machinery, hardware. Trade is carried on mostly with Great Britain; the United States ships to British Guiana kerosene, fish and breadstuffs.

The products of French Guiana are cocoa, phosphates, various woods, rosewood essence and hides. The colony is a penal settlement for French convicts sentenced to hard labor.

Dutch Guiana produces sugar, rum and molasses, cacao, bananas, gold, coffee, rice.

The imports of the French and Dutch Guianas are similar to those of the British.

Venezuela.—The surface of Venezuela is naturally divided into three zones: the agricultural, the pastoral and the forest. Cereals, coffee, cacao, sugar cane grow in the first zone; stock raising is carried on in the second, and in the third, rubber, tonka beans and other tropical products are grown by the inhabitants.

Venezuela is rich in metallic and non-metallic minerals; especially abundant are deposits of copper, silver, iron and gold.

Manufacturing industries are few, and therefore finished commodities are the chief item of import.

The United States and France have the largest share of the Venezuelan exports; Great Britain excels both countries in the value of imports.

Colombia is rich in minerals and mining is carried on extensively, gold and silver mines being the most important; other minerals found are copper, platinum, lead, mercury, emeralds, etc. Several departments (provinces) have rich deposits of coal, petroleum, as well as of iron, limestone and fireclay. The area under cultivation is small, the country's development being retarded by poor roads and inadequate transportation facilities. Tobacco and particularly coffee plantations furnish commodities for export. The rubber tree grows wild, and very little is being done with its product; dye and cedar woods are also abundant, but unexploited.

Colombia has numerous cattle, goats, sheep and swine, and exports large quantities of hides; other exports besides

coffee and tobacco are ivory nuts, minerals, cotton and cotton seed, and asphalt.

Valuable pearl fisheries are on the coast.

The chief imports are flour, lard, petroleum and cotton goods from the United States, sugar and potatoes from Germany, textiles from Great Britain. In 1909 the United States imported from Colombia about $7,000,000 worth, while its exports were $3,679,000.

Bolivia.—The greatest part of the population of about 2,000,000 consists of Indians (57 per cent), and of mixed races (27 per cent). More than one-fourth of the people are engaged in agriculture which is, however, in a backward condition. Wheat, corn, barley, potatoes are raised for domestic consumption; coffee, coca, quinces for export (mostly to Chile and Argentina).

The mineral wealth of Bolivia is widely distributed and abundant; it includes tin, silver, copper, lead, zinc, antimony, bismuth, the first being the most important in the list of Bolivian exports. In 1908 it was shipped abroad to the value of $13,800,000 out of total exports amounting to $17,514,000. In the same year silver and shipments totalled $2,802,000.

Rubber is being produced and exported, but the industry is not in a prosperous condition.

Cattle, sheep and llamas graze in large numbers on fine pastures, but very few animal products are obtained.

Chief imports are textiles and heavy made cloths, provisions, wines and spirits, hardware, Great Britain furnishing the bulk of these goods. The share of the United States in the foreign trade of Bolivia is small. In 1909 the imports from the United States equalled $138,000; the exports were valued at $793,000.

Ecuador, so called because of its situation under the equator, has an area of 420,000 square miles and a population of only 1,500,000, most of which is of Indian or of mixed blood.

Ecuador may be divided into three zones, dependent upon the altitude of the place. The lowlands are hot, as hot as the equatorial sun can make them, while the peaks of the Andes Mountains, towering from 19,000 to over 20,000 feet above them are covered with perennial snow; between these two extremes lie the plateaus of various elevations (from 6,000 to over 9,000 feet), possessing a temperate climate, adapted to the cultivation of wheat and other cereals.

Agriculture is the chief occupation of the people, cacao being the leading commercial product; in 1908 it was shipped abroad to the extent of 64,000,000 pounds, valued at $6,400,000, furnishing more than half of the total export trade. Other important items of export are ivory nuts, coffee, rubber and "Panama" hats; the latter are made almost exclusively in Ecuador, they range in price from $1 to $125 and may be found for sale in every part of the world.

The mineral resources of the country have been only slightly exploited because of lack of capital and of transportation facilities.

Imports consist of textiles, food products, coal, iron, hardware and machinery, liquors, clothing, etc.

In 1909 exports to the United States were $2,730,000, imports from there $1,850,000. France excels the United States in exports from Ecuador, Great Britain in imports into that country.

Peru, with a population of about 4,500,000, over 55 per cent of whom are Indian, 25 per cent mestizos, 2 per cent negroes and 2 per cent Chinese, the rest being white, covers over 670,000 square miles and may be divided into three distinct zones: (1) the dry, extending along the coast to the foot of the Andes Mountains, in which practically nothing can be cultivated without irrigation; (2) the region between the mountain ranges, consisting of extremely fertile plateaus, on which are bred cattle, alpacas, sheep and llamas; (3) the eastern slope of mountains covered with vast,

luxuriant forests consisting of many useful woods and medicinal plants.

Coffee, sugar cane, cotton, cacao and rice are the principal agricultural products, each contributing more or less to the export trade of the country; other products grown are tobacco, wine grapes, olives, ramie and corn.

The mineral resources are vast and varied and they are at present one of the greatest items of national wealth, the mines producing gold, silver, copper, coal and iron.

India rubber and chincona bark are the main forest products. An important branch of industry is the exploitation of the guano deposits of the republic; in 1907 about 80,000 tons of this product were exported. An excellent grade of wool, sought by foreign markets, is furnished by the alpaca, a native animal of Peru.

The imports include minerals, metals and machinery, wheat, timber.

Great Britain occupies a leading position in the foreign trade of the country, followed by the United States, Germany and France.

Chile extends over more than thirty-eight degrees of latitude, occupying a narrow strip of land of an average width of only 90 miles. It lies between the Andean Mountains and the Pacific Ocean. The northern part of the country consists of vast nitrate beds and other more or less desert land containing many mineral resources and yielding copper, gold, silver, iron. The central division of the republic, because of its climatic conditions, is pre-eminently agricultural, while extensive forests furnishing various kinds of cabinet and other woods abound in the south.

Mining, due to the extensive deposits of nitrate of soda, occupies the first place amongst the industries of the country, over 2,000,000 tons of the product being exported annually. In the exports of 1908, mineral products were represented by over $99.000,000 while vegetable products were

less than $9,000,000 and animal products equalled but $6,-091,000.

In agriculture, primitive methods are mostly used, though modern machinery is being imported in increasing quantities. Wheat and barley are the chief cereals cultivated; other products include excellent wine, fruits and vegetables. The soil is very fertile in many parts of Chile, and the opening of the country through irrigation and better transportation facilities, which now are under way, will undoubtedly lead to the development of many agricultural pursuits, suited to the conditions of the country.

Manufacturing industries are mostly of a local character; a few, however, have achieved national importance; the manufactures consist of chemical and metallurgical works, textile mills, leather and shoe factories, breweries and wineries, etc.

Chile imports coal, machinery and tools, cotton fabrics, oils and colors, provisions, paper, beverages. Great Britain has the largest share of Chile's foreign trade, Germany being next, and the United States occupying the third place. In 1909 the exports from Chile to the United States were $13,712,000 (as compared with $18,287,000 in 1907), and the imports from the United States equalled $5,466,000 ($10,195,000 in 1907).

Asia.

English Colonies. (A) India had in 1901 a population of over 232,000,000 of which 192,000,000 were engaged in agriculture. The number of British born did not exceed 100,000. The leading crops of the country are rice, wheat and other cereals, pulses, cotton, oil seeds, opium, tobacco, sugar cane, tea and coffee. The climate is tropical with the exception of the high altitudes in the northern provinces where the Himalaya and the Hindu-Kush Mountains stretch as a barrier between the Indian Peninsula and the rest of the Asiatic Continent. Rainfall is very unevenly

distributed; in order to farther agricultural pursuits, a splendid system of artificial irrigation has been established in many sections of India.

All manufactures, until recently, were hand crafts; these manufactures consisted of cotton fabrics, carpets, shawls, wood and ivory carving, etc. At present there are a number of cotton and jute factories, India possessing about 6,000,000 cotton spindles, half a million of jute spindles and giving employment close to 400,000 men. Of lesser importance are woolen and paper mills, breweries, etc.

The main obstacle to rapid industrial development is the difficulty of weaning the Indian away from stereotyped industrial methods; the work of teaching him the use of appropriate tools and labor-saving devices is going on unremittingly, and the results of this work may be seen in many parts of India.

The chief exports in the order named are: raw and manufactured cotton and jute, rice, oil seeds, hides and skins, tea, wheat, opium, lac, raw wool, rubber, spices, rattan, etc.; the leading imports consist of cotton manufactures, metals, machinery, hardware and cutlery, railway equipment, oils, provisions, apparels, chemicals and drugs, glass, spices. The largest part of the import and export trade of India is with the United Kingdom, Germany occupying the second place both in the value of imports and exports. The United States has a small share of Indian commerce; in 1909 the exports from India to the United States were $43,500,000 while the imports from the United States approximated $8,370,000; this does not represent more than two per cent of the total imports of the country.

(B) Ceylon is a very prosperous island off the coast of India, its chief products consisting of tea, graphite, copra, cinnamon, cacao and cocoanuts. Rice is the leading article of import; other imports being coal and coke, cotton goods, spirits, etc.

(C) The Straits Settlements are important because of their geographic position on a route to and from China and Japan. The ports of the colony are free from duties and most of their trade, centered in Singapore and Penang, is transit trade. Domestic exports consist of tin, which comes from the adjacent mainland and islands, gums, spices, copra, and tapioca.

(D) Northern Borneo is tropical in its climate and products, the leading of which are tobacco, sage, pepper, woods and rubber.

French Colonies are all concentrated in Indo-China and consist of Cochin China, Cambodia, Annam and Tonkin. They are rich in resources, but at present these resources yield comparatively little. The chief export is rice which amounted in 1907 to 1,405,000 metric tons, valued at $30,000,000. Other exports are fish, pepper, hides, coal, cotton, rubber, and sugar.

Dutch possessions embrace some of the best East India Islands: Java, Madura, South Borneo, Celebes and the Moluccas. Java is perhaps the most forward economically of all the tropical possessions of European nations; it produces tremendous quantities of cane sugar; until recently this was the only product of its vast and intensively worked plantations. At present coffee, tea, cacao, cinchona, tobacco are also extensively cultivated and add to the wealth of the island. The islands possess deposits of coal, tin, and mineral oil.

The United States' Colonies comprise the Philippine Islands having an area of 125,000 square miles and a population of 7,650,000, mostly of Malay origin; the two largest islands are Luzon and Mindanao.

The chief products are Manila hemp, sugar, coffee, rice, copra, tobacco and indigo. Agriculture is carried on by primitive methods and with antiquated implements; means of transportation are insufficient, and farm animals scarce. However, conditions are being gradually improved through

the efforts of our Bureau of Agriculture, which maintains experimental farms on the islands, distributes seeds, roots, and plants adapted to cultivation, combats destructive insects, etc.

Large forests of valuable hardwoods, dyewoods and gum cover the interior of the islands; the forests are under the supervision of the Forestry Bureau, which frames rules for their protection and working.

Mineral resources are as yet undeveloped, but prospecting is now being vigorously conducted, and many deposits of lignite (inferior grade of coal), iron, gold, copper, lead, etc., have been located.

Asiatic Russia may be divided into Caucasus, lying partly in Europe, partly in Asia, Siberia, and Central Asia.

(A) Caucasus is rich in minerals, especially petroleum, which forms its largest product. The cultivation in Transcaucasia includes raw silk, cotton and grapes. Native manufactures consist of carpets, embroideries and weapons.

(B) Siberia consists of three sections: tundras in the north, forests in the middle and agricultural region in the south. The latter, traversed by the Transsiberian railway, is being gradually colonized by peasants from European Russia; it offers good opportunities for the raising of cereals and other hardy crops of the north temperate zone. Siberia is very sparsely populated and its industrial development has hardly begun. It possesses rich mineral deposits, rivers stocked with fish, forests overrun by fur-bearing animals and full of valuable timber; comparatively few of these resources are as yet utilized.

Agriculture is the leading industry; large quantities of butter and cheese are exported to Europe.

(C) Central Asia is in its western part a desert with an occasional, at times large and beautiful, oasis and with possibilities of irrigation; in its eastern portion it is well watered, and its fertile valleys with their black soil attract ever-increasing numbers of Russian immigrants. The alti-

tude of the country permits the raising of cotton, grapes, figs, in addition to cereals and vegetables.

The commerce of Asiatic Russia with the United States is comparatively small. For 1909 it did not exceed $2,500,000.

Independent Asiatic States. (A) China has an area by one-third larger than that of the United States and an estimated population of 434,000,000 people. It is essentially an agricultural country, wheat, barley, corn and other cereals, pease and beans being cultivated in the northeast, rice, tea, sugar, cotton and indigo in the south. Because of restrictive measures, the cultivation of the opium poppy, which played such an important role in the commerce of the past, is being gradually discontinued.

China is a country of vast mineral resources, as yet developed but little. The coal fields of China are considered by some authorities to be the largest in the world. Rich deposits of iron ore, many in proximity to coal, are known to exist; other minerals mined to some extent are tin, lead, copper, and silver.

Most of the manufactures of China are handicrafts. The chief manufacturing industries are textiles (silk and cotton) and the making of porcelain or glassware.

The exports consist of raw and manufactured silk, tea, cotton, beans; the imports, of cotton goods, rice, sugar, kerosene, opium, metals, etc.

(B) Japan occupies a chain of long, narrow, much indented islands, extending from Kamchatka in the north to Formosa in the south. Its position with regard to the Asiatic Continent and to the commercial nations of the world is somewhat similar to Great Britain's position in Europe, and it is to this position, as well as to the fact that almost every part of Japan is within easy reach of sea traffic, that we may attribute the country's recent industrial and commercial development. With an area a little larger than that of California, Japan supports a pop-

ulation of 47,000,000 and this notwithstanding the mountainous, volcanic character of the land, but one-sixth of which is tillable. Its soil yields abundantly to intensive cultivation, climatic conditions being on the whole favorable to the growth of both the cereals of the temperate zone and the economic plants of the tropics. Japan produces large crops of rice, wheat, barley and rye, rice being the main foodstuff of the population and by far the most important cereal crop. Of the industries producing for export, cotton growing, silk raising and tea growing are the most prominent, silk furnishing more than one-fourth of the exports.

Japan has rich mineral resources; the yield of copper, coal and clay is so large that notwithstanding the demands of the rapidly growing domestic manufactures considerable quantities of these minerals are exported. Japan mines also iron, sulphur, petroleum, antimony, gold and silver.

The forests of Japan contain many valuable woods and its waters are full of fish, the fishing industry giving means of livelihood to over two millions of people.

The Japanese are skilful artisans and their work compares very favorably with that of Great Britain, the United States and Germany. The main exports of Japan are raw silk and silk manufactures, cotton yarn and cotton shirtings, copper, coal, matches, earthen ware, straw goods, camphor.

The imports of Japan include raw cotton and cotton manufactures, iron and steel, rice, sugar, oil cake, wool and woolens, wheat and wheat flour. Great Britain heads the list of the importers with the United States as a good second, followed by British India, China and Germany.

(C) Korea is a purely agricultural country, producing rice, wheat, beans, tobacco and cotton in its southern parts; barley, millet and oats in the north. Methods of agriculture are primitive and means of communication poor.

A few gold mines are being worked; other minerals known to exist in abundance are iron, coal and copper.

The exports include rice, gold, beans, hides; the imports, cotton goods, iron and railway material, timber, silk goods, tobacco, petroleum, etc.

(D) Siam.—The chief produce of Siam is rice, consumed in large quantities at home and forming the staple article of export. Other products are salt, pepper, dry fish, cattle, and sesame; they all contribute to the export trade of the country. Hemp, tobacco, cotton and coffee are produced for local consumption. Dense forests of Upper Siam furnish teak. The mineral resources of the country are large and varied, they include gold, rubies, tin, coal, iron, manganese and zinc.

(E) Persia contains an area of 628,000 square miles, a vast portion of which (about one-third) is desert. Territories adapted to agriculture produce wheat, barley, rice, fruits, tobacco, cotton and silk.

The mineral resources of Persia are considerable, but poor means of transportation and scarcity of fuel and water hinder their development.

Persia exports fruits, raw cotton, woolen hand-made carpets, fish, raw silk; it imports cotton, sugar, tea, petroleum, woolens, flour.

Russia is the heaviest importer into Persia, followed by the British Empire, Turkey, France, China. Most of the exports go to Russia.

(F) Afghanistan, barring a number of fertile valleys, is an absolute desert. Commerce is carried on mostly with India and consists of exports of horses, cows, foodstuffs, drugs, tobacco, and of imports of manufactured goods.

Africa.

British Possessions. (A) British West Africa.—The leading products of this colony are palm oil and palm kernels, rubber, cocoa, ivory, ostrich feathers, live stock and

hides, cotton, gum, copal, earth nuts, fruits and drugs. There are rich mineral deposits, as yet undeveloped. The imports to the value of $41,000,000 in 1907 consisted of cottons, spirits, hardware, tobacco. The exports about equalled the imports and included palm oil, palm kernels, gold, rubber, cocoa, etc.

(B) British East Africa produces on its lowlands rice, corn and other plants requiring a mild warm winter; on the highlands, wheat, barley and coffee are cultivated. Cocoa, cotton and tobacco are being successfully introduced and promise to increase considerably the economic value of the colony. The mining resources are unsurveyed; iron is found in most districts, gold in a few places, and here and there lie untouched deposits of copper, mica, graphite, limestone, opal and carbonate of soda. On the uplands large pastures are available for cattle raising, and the forests in the coastal region yield rubber, gum, copal, figs, olives, bamboo, castor oil, beans and good timber. The leading exports are hides and skins, ivory, rubber, copra, grain and wax; the imports consist of textiles, cereals, provisions, iron and steel wares. Foreign trade is small and is carried on mostly with Great Britain. The share of the United States in this trade is not over $1,500,000 annually.

(C) British South Africa comprises the richest parts of the African Continent. In it are included Cape Colony, Natal, Orange River Colony, Rhodesia, Transvaal, Basutoland and a few other possessions and protectorates.

At present gold and diamond mining is the greatest source of attraction for the European capitalists and settlers; it is carried on very intensively with all modern machinery and furnishes the chief item of exports, valued at hundreds of millions a year. Kimberley is the leading diamond-producing center of the world, supplying 98 per cent of all the diamonds entering into commerce. Trans-

vaal yields vast quantities of gold and silver. Other mineral resources of South Africa are copper, coal, and iron.

South Africa may be divided climatically into (1) a coastal region which is a lowland with a warm and in many places moist climate, (2) a middle district of somewhat higher altitude, with a drier and a more healthy climate, well adapted to the raising of wheat, barley, corn, oats and other cereals, and (3) a high inland plateau, where the air is exceedingly dry and the rainfall very scanty. The coastal region produces sugar, cotton, tobacco and wine. The dry plains of the interior are used for a sheep-raising industry, after mining the largest source of the country's wealth. Manufacturing establishments include flour mills, breweries, tobacco factories, etc. The exports consist of gold and diamonds, wool, ostrich feathers, angora hair, hides, skins and coal. The imports are largely textiles, foods, drinks, iron and steel goods, leather and leather manufactures, etc.

By far the largest amount of trade is carried on with Great Britain. The exports to the United States are insignificant, and the imports from there are also comparatively small; in 1909 the first were valued at $1,700,000, the second at $7,300,000.

French Possessions. (A) Algeria.—The chief occupation of the Algerian population is agriculture. The crops consist of wheat, barley, oats, corn, potatoes, beans. Oranges, dates, bananas, figs, almonds and many other fruits grow abundantly and are shipped to France by fast steamers crossing the Mediterranean between Algiers and Marseilles in twenty-four hours. The production of olive oil and the making of wine are of importance and add considerably to the exports of the colony. The mines of Algeria are worked for iron, zinc, silver, lead, copper and coal. The forests are cut for firewood and for industrial purposes; in some of them are found cork oak trees. Extensive fisheries yield sardines, sprats, anchovies, tunny-fish, etc.

The main exports are wine, sheep, wheat, barley, olive oil, cork, phosphates, zinc ore, fruit; the main imports, cottons, clothing, linen, machinery and other metal works, woodworks, sugar, etc. France monopolizes almost the entire foreign trade of Algeria, over 80 per cent of the imports coming from France and about 70 per cent of exports going to that country.

(B) Tunis adjoins Algeria and like in the latter colony the chief industry of the people is agriculture. The products resemble those of Algeria, being wheat, barley and oats, olives and wine, oranges, lemons, almonds, alfalfa and cork. Mining is steadily increasing in importance; the minerals mined are copper, lead, zinc and phosphates.

Cattle is the largest item of export, phosphates being second and olive oil third in value. The imports are cotton goods, metal work, hardware and machinery, wheat, flour, sugar. More than one-half of the commercial relations is with France.

(C) French Congo, French Somali Coast, French West Africa and the Sahara are of lesser significance commercially, than either Algiers or Tunis. A very valuable colony is the Island of Madagascar, whose vegetable products include rice, cotton, cacao, vanilla, and whose mineral resources contain gold, copper, sulphur, graphite and lead. Ninety per cent of the imports are from France.

German Colonies consist of Togoland, Kamerun, German Southwest Africa and German East Africa. They are all situated in the tropical part of the continent, and as yet have been very little developed. The exports are palm oil, palm kernels, rubber, copra, ivory, cotton, cocoa, animal products. The imports comprise cereals, meat and provisions, iron and iron works, cotton.

Portuguese Colonies embrace an area of 793,980 square miles, the greater part of which is of comparatively little economic value. The one thousand miles of coast line of Angola are marshy, malarial and devoid of good harbor

sites; the same is true of the coast of the Portuguese East Africa and of Guinea. The chief products are rubber, the supplies of which are however becoming exhausted, cotton, the growing of which, although it could be made remunerative, is neglected, sugar, cocoanuts, beeswax, ivory, mining products and animal products. The chief imports are textiles, iron works, alcoholic liquors; the leading exports comprise coffee, rubber, ivory, wax, various ores and dried fish. The trade is largely with Portugal. The Portuguese possessions also include a few small islands: Cape Verde, Prince's and St. Thomas.

Belgian Possessions consist of Congo, which state lost its fictitious independence and freedom in 1907, the year of the annexation to Belgium. The area of the colony is estimated at 910,000 square miles, the population at from 9,000,000 to 20,000,000; the number of Europeans approximates 3,000, more than half of which are Belgians. The chief products are rubber, ivory, palm oil, copal, gold, coffee and cacao. The imports include cotton (the largest single item), provisions, alcoholic liquors, arms, ammunition, machinery. Most of the trade is carried on with Belgium.

Italian Dependencies extend on the coast of the Red Sea for a distance of 670 miles and include an area of 88,500 square miles. Abundance of pasture land permits the raising of camels, oxen, sheep and goats, whose products supply only local trade. Scarcity of water necessitates works of irrigation before agriculture can be carried on successfully. Pearl fishing is an industry of some significance. Italy exercises a protectorate over a part of Somaliland along the east coast of Africa.

Tributary States of Turkey. (A) Egypt, although tributary to Turkey, is occupied by Great Britain, which manages its finances and supervises and regulates its commerce. The fertile part of the country lies on both sides of the river Nile, the waters of which are used for irrigat-

ing purposes. The fertility of this region is so great that it permits the raising of three crops a year: cereals in winter, cotton, sugar and rice in summer, corn, millet and vegetables generally in autumn. Wheat, corn and cotton are the main crops, raw cotton being by far the largest item of export from the country. The imports consist of textile and metal manufactures, wood, coal, provisions. Great Britain is at the head of the list of exporters from and importers into Egypt. In 1909 the United States received from Egypt goods to the value of $11,200,000, while its exports to Egypt were about $1,300,000.

(B) Tripoli lies along the Mediterranean. Its products are scanty. Barley is the chief food of the people. The leading industry in the interior is herding. The coastal climate and soil permit the cultivation of dates, olives, oranges and lemons, small quantities of cocoa being exported. Other items of export are esparto grass and sponges.

Independent African States. (A) Morocco lies in northern Africa, along the shores of the Atlantic and the Mediterranean. It occupies a part of the continent nearest to Europe and because of the extreme fertility of its shore region has decidedly a promising future. A despotic form of government hinders industrial and commercial development. The interior of the country is a high plateau with scanty rainfall, where only an occasional oasis permits agricultural pursuits. The exports consist largely of the products of herding: hides, skins, wool, oxen, etc. They include also a few cereals, barley particularly, nuts and fruits. The imports are cotton manufactures, sugar, tea, flour, iron and hardware, etc. The trade is carried on mostly with Great Britain, France and Germany.

(B) Abyssinia is a mountainous tropical country; its lowlands are adapted to the growth of the coffee tree, the sugar cane and the coffee plant; its mountain slopes and plateaus can yield the fruits of southern Europe and the

wine grape, while its higher altitudes are either covered with valuable forests or are suited for the cultivation of the temperate zone cereals. Abyssinia is rich in minerals, especially gold, copper, iron, coal, sulphur, and salt, and its pastures support large herds of horses, oxen and sheep.

The exports consist of coffee, hides, skins, wax, ivory and gold; the imports of cotton and woolen fabrics, carpets, hardware, arms and ammunition. The share of the United States in this trade is very insignificant.

(C) Liberia lies on the western coast of Africa. It has magnificent forests of mahogany, rosewood, dyewood and medicinal shrubs, but the forests remain unworked, and the fertile soil of this small negro republic is scarcely cultivated. It exports some coffee of inferior quality, rubber, palm oil, cocoa, ivory, ginger, cain-wood; imports cottons, provisions, boots, hardware, dried fish. Great Britain and Germany are the leading importers and exporters.

Australia.

The Commonwealth of Australia, a colony of Great Britain, occupies a landmass situated entirely in the southern hemisphere and separated by vast stretches of open sea from all the great commercial nations of the world. It lies between the tenth and the fortieth degrees of latitude and its human, vegetable and animal life are therefore under the constant influence of the tropical and subtropical sun.

The Australian Continent is somewhat smaller in size than Europe, but this vast territory has a population of only 4,200,000 (December, 1907), by far the largest proportion of which live in New South Wales and Victoria. Other states composing the commonwealth are Queensland, South Australia, Western Australia and Tasmania.

The interior of Australia is practically rainless, most of the rain brought by the southeast trade winds being deposited on the eastern mountain slopes and on the coast.

Not adapted to agriculture, many parts of the interior present good pasture land and support millions of sheep and cattle, Australia being the principal sheep-raising country on earth.

Copious rains fall on the northern coast of Australia; the forests found on this coast abound in cabinet and other useful woods; the southwestern coast has comparatively little rainfall.

Before the coming of the European settlers, Australia, because of its isolation from the rest of the world, had its own peculiar trees, roots and grasses, animals and birds. They were sufficient to satisfy the simple needs of the natives, but the white man, in order to be able to live the life of a civilized being, was obliged to import cereals, fruits and domesticated animals from the old continent; using the sailing vessel and the steamer, he overcame that natural barrier which the ocean presents to the migration of animals and plants. At present Australian soil yields wheat, corn, barley, oats, potatoes, pumpkins and melons, as well as bananas, pineapples, oranges, coffee and tobacco.

After wool growing, mining is the main source of Australian wealth and the most important industry from the point of view of foreign trade. Australia has rich deposits of gold, copper, silver, lead, tin, coal and bismuth; in 1907 it exported about $47,000,000 of gold bullion and specie, also considerable quantities of the other above-mentioned minerals.

The animal industry in addition to wool furnishes for export butter, tallow, skins and hides, mutton, leather, beef, living animals and tinned meat.

Wheat and flour are also items of considerable export, wheat with a value of about $24,000,000 being the third in the list (in 1907).

The imports into Australia are much smaller than its exports and consist of metal manufactures, machinery and

implements, cotton, linen, woolen and silk goods, apparel, iron and steel, timber, tea, spirits, oils and tobacco.

Australia trades mainly with the United Kingdom; in 1909 the imports from the United States were $24,077,000, while the exports to that country equalled $13,973,000, the first representing approximately one-eleventh of the Australian imports, the second one twenty-seventh of its exports.

New Zealand lies about 1,200 miles east of Australia and consists of two large and a number of small islands. Two-thirds of the surface of New Zealand is suitable for agriculture and grazing, the rest is under forest or barren.

New Zealand is mountainous in many parts, and mineral resources are abundant, especially gold and coal, both of which are extensively mined and add considerably to the wealth of the islands.

The colony, however, is firstly a pastoral country, wool, frozen meat, butter and cheese, sheep skins, pelts and tallow furnishing the leading items of export, and the animal industry being the most firmly established and the most rapidly growing industrial pursuit of the people; the number of sheep in New Zealand exceeds 20,000,000, and in 1906 the wool clip was 175,000,000 pounds, while approximately 4,274,000 animals were exported as frozen mutton and lamb (226,856,000 pounds).

The chief crops are oats, wheat and barley; the whole amount produced is consumed at home, the total value of grains exported showing great fluctuations, but averaging less than one million dollars annually.

An interesting item of exports are rabbit skins, their number reaching 17,000,000 in 1893 and has been declining since; it amounted to 5,454,000 in 1906; the colony regards with satisfaction the decline in exports of this commodity, as it indicates the gradual abatement of the rabbit pest.

Manufacturing industries comprise meat-freezing plants, butter and cheese factories, sawmills and planing mills,

tanning and wool-scouring establishments, grain mills, clothing, boot and shoe factories, breweries, etc.

The principal imports are clothing and textiles, tobacco, fruit, paper and printed books.

Great Britain leads both in the value of exports from and imports into New Zealand; next in importance, but far smaller than the first, are the trading relations with Australia, the United States occupying the third place. In 1909 New Zealand's exports to the United States were $2,847,000, and the imports from that country $5,463,000, —an insignificant amount considering the total foreign commerce of the islands; the latter approximates $180,000,000 a year.

Oceania.—Throughout the vast expanse of the Pacific Ocean are scattered thousands of islands, some isolated and others grouped together. The islands are tropical in character, sugar cane, cocoanut, banana and breadfruit being their staple products. Sugar and copra (dried meat of the cocoanut) are exported from the islands, also vanilla, mother of pearl, etc. Imports consist of cotton goods, hardware, machinery, provisions.

Most of the islands are under the control of the United States or some European nation (Great Britain, Germany or France). With the exception of the Hawaiian Islands, the trading relations of Oceania with the United States are unimportant, both imports and exports being below $1,000,000 a year.

Possessions of the United States.—The Hawaiian Islands have a total area of 6,450 square miles and a population of 180,000. The islands lie in the torrid zone, are mountainous and volcanic, but their soil is highly fertile and well adapted to the raising of sugar, rice, coffee, hemp, bananas, pineapples, etc. In 1908 the exports from Hawaii to the United States amounted to $41,640,000, of which $38,600,000 was for raw sugar, the rest for refined sugar,

fruits, coffee and rice. The value of shipments from the United States to Hawaii was $15,300,000.

Besides Hawaii the United States owns in Oceania the island of Guam, having an area of about 200 square miles and a population of 11,500, and the island of Tutuila, with an area of 54 square miles and a population of 3,800. The American flag has been hoisted also on many smaller Pacific islands, some of them uninhabited. These islands are of very little commercial value at present.

IX. THE UNITED STATES.

Both the absolute and the relative figures showing the industrial and commercial development of the United States tell the most wonderful story of inventiveness, energy, pluck and perseverance ever displayed by civilized man in the conquest of a continent.

The continent with all its vast resources existed, but it was a wilderness, and it took years of adaptation, of strenuous life on the frontier, of struggles with exuberant and stubborn nature, before the dismal forests gave way to the ax and the saw, before the mountains began to yield their wealth of minerals, before the immense plains became cultivated fields, and the silent banks of lakes and rivers seats of busy mills and factories, throbbing with ceaseless activity, never stopping, never ending.

It took years of planning and daring, before railroads, starting from the settled East, and crossing mountains and deserts, opened up empires in the North, in the South and in the West, making out of widely segregated territories, the abodes of nomadic Indians, a powerful Unit, a country which today stands as the embodiment of the greatest economic efficiency and prosperity known in history.

Our development has been particularly phenomenal in the last few decades. With the close of the Civil War ended the first chapters of our industrial life. With slavery gone in the South and the power to organize forces and

to lead them on to victory developed in the North, there began a new economic era. The captain of war became the "captain of industry," and the fertile soil, the rich mine, the virgin forest surrendered to him their wealth with a bountifulness unknown in any other country.

Aided by a climate generally favorable to the growth of economic plants and to the active work of man in the field and in the shop, we have become the foremost amongst the world's nations in almost every line of endeavor: in agriculture and in mining, in manufactures and in commerce.

However, granting all praise due to our industrial leaders and to the rank and file of our laborers, it is well to remember that they were aided in their enterprises by the superabundance and variety of natural resources. They were able to do constructive work unhampered by the necessity to economize, to utilize to the best advantage every foot of ground in the field. They were as lavish in their use of these resources, as Nature was of her gifts, with the result that frequently the use became an abuse; they looked upon natural factors as inexhaustible. But that time has gone by. The Nation is being gradually awakened to the realization of the fact that every tree which is being cut without replacement and every ton of coal or iron that is being wasted, hastens the day when there will be no trees to cut and no minerals to mine.

The problem of the conservation of natural resources brought recently to the front by our Federal Government is of more than academic significance, it is of vital importance to the continued prosperity of the Nation.

Our practice has been vast prodigality. It paid and it pays to waste, describes the industrial method of our people. It paid to work only the rich streaks of ore, leaving poorer grades unutilized, in many instances rendering them unavailable for ourselves and for future generations; it paid to exploit the fertility of our soil, there was so

much good land at hand and refertilization is a tedious process; it paid to cut forest after forest and never to plant a single tree. But even the greatest treasure comes to an end; we must realize that unless our ruthless exploitation stops we will soon be "paid in full."

But waste is not confined to the United States, and very often it is nothing but apparent waste. Frequently in order to economize on labor, we are justified in wasting other factors of production, less valuable. The boasted intensity of cultivation and the marvelous yields per acre in many instances are made possible only by hard cheerless work long before sunrise and hours past sunset, work on week days and on Sundays, work of adults and of children. Fortunately, intelligent tillage of the soil does not require this kind of cultivation; through use of fertilizers, scientific rotation of crops, irrigation, etc., the yields per acre have been raised to a considerable degree; they reached the average of 30 bushels per acre in England, 28 bushels in Holland and Belgium, 24 bushels in Germany and 19 bushels in France. The yield in the United States is 14 bushels, while in Italy it is 12 bushels, in Russia 8 bushels and in India 7 bushels.

Our agricultural experiment stations are doing excellent work in introducing better methods of agriculture; many a depleted soil has been brought back to its former productivity and many an abandoned farm has been regained, through the intelligent efforts of our agricultural chemists. Each state has from one to two experiment stations. Bulletins, containing valuable information to the grain and stockraiser, to the horticulturist, to the dairyman, etc., are issued periodically.

In Washington a number of bureaus act as farmers' aids and advisers. The most important of these are the Weather Forecast Bureau, the Bureau of Plant Industry, the Entomological Bureau and the Bureau of Chemistry.

The prognostics of the Weather Forecast Bureau, based upon observation of air currents, atmospheric pressure, etc., are of inestimable value. The Bureau of Plant Industry has a force of experts searching for new plants and seeds capable of thriving in various parts of the United States; it was through the instrumentality of this bureau that sorghum, tea, rice, mangoes, etc., were transplanted from the Orient to this country, and that new and better varieties of figs, grapes, watermelons, radishes, cotton and wheat were introduced. The Entomological Bureau discovers helpful and parasitic insects; it tells how to nourish the first and how to exterminate the second. The Bureau of Chemistry determines the fertility of any given piece of land, the kind of crops it will grow best and the kind of fertilizers it needs.

Agriculturally, the United States is usually divided into six great sections, in each of which certain staple products are predominant. These sections are as follows:

(1) The New England and New York Section, characterized by diversified farming and dairying.

(2) The Corn and Winter Wheat Belt, stretching from the Atlantic in the East to Nebraska and Kansas in the West and from the 35° to the 43° of latitude.

(3) The Spring Wheat Belt, extending north of the 43° of latitude and consisting of the states of Wisconsin, Minnesota and the Dakotas.

(4) The Cotton Belt, extending south of the 35° to the Gulf of Mexico and from the Atlantic in the East to Texas in the West.

(5) The Wool and Live Stock Belt, embracing the Great Western Plateau in the states of New Mexico, Colorado, Wyoming, Montana, Idaho, Utah, Arizona and Nevada.

(6) The Pacific Coast Region, characterized by grain and fruit growing.

Agriculture.

Vegetable Products.—The most important branch of agriculture in the United States is the raising of cereals. Cereals represent more than half of the total value of the country's crop and more than half of the land under cultivation is devoted to the production of grains. The North Central Division extending from the Alleghanies in the East to approximately the one hundredth degree of longitude in the West is the great grain-producing belt. In this region are the states of Iowa, Illinois, Kansas, Missouri and Nebraska with their stupendous output of corn; here are the two Dakotas, Minnesota, Ohio and Indiana leading in the production of wheat, here also is harvested about three quarters of the country's crop of oats and most of her barley and rye. The other section of the United States where cultivation of cereals is carried on very extensively is the Northwest.

Corn is the most valuable of the crops in the United States. In 1907 the production of corn equalled 2,592,000,000 bushels, valued at $1,337,000,000. There is scarcely a state in the Union which does not grow corn, but only in a few of these states does the raising of it constitute the chief agricultural pursuit; these states are Iowa, Illinois, Missouri, Nebraska, Kansas, Indiana and Ohio; they form what is known as the corn belt of the country, yielding about 90 per cent of the total crop.

Wheat is after corn our leading crop; conditions most favorable to its growth are found in the north central and northwestern regions, which raise far in excess of their home demand and sell their surplus to the northeastern, southern and Rocky Mountain states, as well as to foreign countries. In 1907 the production of wheat was 634,000,000 bushels, valued at $554,000,000.

Wheat and corn growing in the United States have been characterized by an extensive system of cultivation

which has necessitated the continuous taking up of new land. But this last cannot be done indefinitely. Our domestic demand for wheat increases rapidly from year to year, while most of the fertile ground has already been occupied. Because of this, improved methods of agriculture, intensive farming based upon a careful, intelligent use of the soil seems to be the only permanent solution of the problem confronting us as producers of breadstuffs.

Oats.—The United States raised in 1907, 754,000,000 bushels of oats, valued at $335,000,000. Oats are grown mostly in the states bordering on the Great Lakes, Wisconsin, Michigan, Illinois, Iowa, Ohio, New York and Pennsylvania being the largest producers.

Barley, rye and **buckwheat** are of comparatively little importance in our agricultural economy, particularly the last two cereals. In 1907 our crop of barley was 154,000,000 bushels, of rye 31,500,000 bushels and of buckwheat 14,300,000 bushels. Barley is grown principally in California, Minnesota, Iowa and Wisconsin; rye in Wisconsin, New York, Pennsylvania, Nebraska and Michigan; buckwheat in New York and Pennsylvania.

In addition to these cereals we raise rice (in the Carolinas, Texas and Louisiana), millet, etc.

Cotton.—The raising of cotton is of the utmost significance in the economic life of the United States. The growing of it is restricted to the South Central and South Atlantic states. Hardly a cotton plant is to be found north of the thirty-seventh parallel of latitude or west of the one hundredth degree of longitude. Immediately after the War of Secession attempts were made to grow cotton farther to the north or to the west of the indicated area, but they all proved unsuccessful, because of unfavorable climatic conditions. Within the limits of the southern states, the cultivation of cotton seems to tend towards concentration in the most favorably situated localities, receding southwestward. The chief cotton-producing states are

Texas, Georgia, Mississippi, Alabama, the Carolinas and Arkansas. The total crop in 1907 equalled 5,303,000,000 lbs., valued at $551,500,000.

Sugar.—In the production of sugar the United States does not occupy a very prominent place. However, there are few agricultural industries that have developed as rapidly within the last few years as this branch of farming, and the future is very promising, particularly for the growth of the sugar beet. The main cause which prevented the United States from raising beets was the intensity of cultivation this branch of agriculture requires; this is a temporary cause, which disappears with a greater density of population and with a more pressing demand upon the products of the soil. Our beet-sugar crop equalled in 1907, 967,000,000 tons, valued at $23,895,000. The chief beet-sugar producing states are those in the North and in the West, California, Michigan, Nebraska and Utah being in the lead.

As to the sugar cane, its production is almost entirely confined to the State of Louisiana; the proximity of Cuba, Porto Rico and other West Indies, the small cost of bringing the product from the rich sugar plantations of the Hawaiian and the Philippine Islands, the dangers of unexpected frosts, all act as checks upon the development of the industry. In 1907 the amount of sugar cane produced was 544,000,000 tons, valued at $28,800,000.

Tobacco.—The United States leads the world in the production of tobacco; the states of Kentucky, North Carolina and Virginia yield nearly three-fifths of our total output; other large producers are Tennessee, Ohio, Maryland and Wisconsin. About one-third of the tobacco produced is exported, most of which is of an inferior grade; some tobacco is imported, the importations coming chiefly from Cuba and Turkey, and representing high-grade goods. The difference in the quality of tobacco imported and exported may be judged from the fact that in 1909 we exported

334,000,000 lbs., valued at $29,800,000, while our imports were 33,290,000 lbs., valued at $18,000,000. In the United States, Connecticut produces the most expensive qualities of tobacco.

Hay is the principal forage crop of the United States; in 1907 our output was 63,700,000 tons valued at $743,500,000. It may be noticed that in 1907 the value of the hay crop was greater than that of the cotton or of the wheat crop. Hay grows most abundantly in the corn belt, in the dairying states of New York and Pennsylvania, and in California.

Flax and **Hemp.**—Flax-growing is carried on in the United States for the seed and not for the fiber. The United States ranks first amongst the flaxseed-producing countries, but the few linen factories which we have in the East must depend on foreign material. More than four-fifths of the total acreage under flax is in Minnesota and the two Dakotas.

Hemp is cultivated almost exclusively in Kentucky; the crop is small.

Live Stock and Dairy Industries.

The raising of live stock occupies a most prominent place in American agriculture.

The principal grazing regions of the United States are found in the semi-arid West, though cattle and other domestic animals are raised more or less throughout the entire agricultural portion of the country.

On January 1, 1909, the total value of farm animals exceeded $4,520,000,000; this included 71,000,000 head of cattle, 20,640,000 horses, 56,000,000 sheep, 4,000,000 mules and 96,300,000 swine. In the number of cattle, of swine and of mules the United States leads the world. In the number of horses, Russia, credited with 25,000,000, exceeds the United States, but the Russian horse is generally smaller and weaker than the American animal. With regard

to sheep, the United States is surpassed by Australia, Argentina and Russia. The supply of goats and asses is comparatively small, due chiefly to the fact that there is little need for these mountain-bred animals in the greater part of the country.

In the United States, as in most of the other countries, live-stock raising for beef is an industry distinct from dairying.

The largest number of heads of cattle is found in the North Central States; next in importance is the South Central division, then the Western and the North Atlantic. Texas has about one-seventh of the number of cattle; it is followed by Iowa, Kansas, Nebraska and Illinois. The great center of live stock production is west of the Mississippi River; it coincides to a large degree with the corn belt; cattle from other parts of the United States are frequently sent into this section to be fattened before their delivery to the slaughtering houses.

Slaughtering and **Meat Packing** have shown a remarkable development since 1850, when the value of their products was $11,980,000; in 1905 it reached $913,915,000. Over 55 per cent of the industry is carried on in the Central States and about 19 per cent in the Western division, leaving but 26 per cent for the Middle, New England, Southern and Pacific states. Illinois occupies by far the most important place in the industry; in 1905 it furnished about 35 per cent of the products. Kansas, New York and Missouri are next, in the order named. Meat packing is concentrated in a few cities, Chicago, Omaha and Kansas City being the most important. In 1905 the number of animals slaughtered was 7,147,000 beeves, 10,875,000 sheep and 30,978,000 hogs.

One of the leading items of export from the United States is meat products; their total value in 1909 was $163,000,000; it included fresh, salted, pickled and cured beef, hams and bacon, pickled pork, lard, canned meats.

Great Britain is our best customer, taking over one-half of the exports.

Dairying is developing most rapidly. The best conditions for the industry exist in Iowa, Wisconsin, Minnesota and Illinois, also in the central parts of Nebraska and Kansas. The total number of milch cows in 1908 was 18,000,000 head and the value of the dairy products approximated $59,000,000. In New England dairying has replaced general farming.

Sheep Raising.—Many sheep are slaughtered for table purposes, but the principal value of the animal lies in the wool it furnishes for textiles. Montana, Wyoming and New Mexico are the leading sheep-breeding states.

The domestic clip of wool is not sufficient to supply the needs of our manufacturers and about one-fifth of the quantity consumed is imported. Carpet wools form the largest proportion of imports.

Lumber and Timber Products.

The timber industry is widely distributed; in this respect it differs from other industries of similar magnitude which are more or less concentrated in particular sections (iron and steel industry, textiles, slaughtering and meat packing, etc.).

Since 1900 important changes have taken place in the lumber industry. In 1905 Washington advanced from fifth to first place, passing Michigan, Wisconsin, Minnesota and Pennsylvania. Louisiana rose from ninth to fourth place, while Indiana dropped from seventh to sixteenth and Ohio from eighth to twenty-first place.

The growth of the industry has been most rapid in the Southwest and on the Pacific coast, while a substantial decline has taken place in the Great Lake region. The Central States also have shown a decrease in their output, particularly in the logging industry, the raw material of which is standing timber; this is due to a very natural cause: the

practical exhaustion of merchantable timber in continuous bodies in these states. The as yet comparatively important sawmill and planing-mill industries of Ohio, Indiana, etc., are supplied with material from Kentucky, West Virginia and other neighboring states. Lower grades of timber are being cut in ever-increasing quantities.

Another significant development has been the general increase in the value of log stumpage; in some instances the increase has been very large; it extends to all species of timber and is due, not so much to the present shortage in the supply of material as to the fact that the available timber land is being rapidly bought up and withdrawn from the market in anticipation of the time when the supply will not equal the demand.

The bulk of the lumber product of the United States is consumed at home. However, there has been an increase in the value of unmanufactured woods exported. It rose from $11,000,000 in 1870 to $45,000,000 in 1905; reckoned in the percentage of total production the exports constituted 5.3 per cent in 1870 and 7.8 per cent in 1905. The most marked increase has been in the exports to Europe. Our imports consist of pine lumber from Canada ($22,000,000 in 1905), and of cabinet woods, chiefly mahogany, from Haiti, Cuba, Porto Rico, Mexico and Central American States.

Mineral Resources.

The mineral resources of the United States are abundant, accessible and widely distributed. Upon their abundance has been to a very large extent based the rapid expansion of the nation's industrial life. Just as the United States has outranked all the other countries in the production of minerals, so also has it outranked them in all those activities which are created and supported by mineral wealth.

The most important metallic and non-metallic mineral products of the United States are coal, iron, copper, clay, petroleum, gold, stone, cement, natural gas, lead and zinc. The total output of minerals for 1907 exceeded $2,000,000,000, as compared with $365,000,000 in 1880, $605,000,000 in 1890 and $1,107,000,000 in 1900. These figures show the extraordinary rapidity with which the mineral resources have been exploited during the last decades. Of the grand total fuels (coal, petroleum and natural gas) approximated $788,000,000, structural materials (clay, stone, cement, lime, etc.) nearly $306,000,000, metallic products (iron, copper, gold, silver, lead, zinc, aluminum, tin, etc.) $903,000,000. The rest was composed of abrasive materials (grindstones, quartz, emery), chemical materials (phosphate rock, salt, sulphur, borax), pigments (zinc white, barytes) and other miscellaneous products (glass sands, mineral waters, precious stones, talc, etc.).

The value of mineral production in the United States as compared with that in other countries is indicated by the fact that during 1907 the country produced 63 per cent of the world's petroleum, 55 per cent of the world's copper, 52 per cent of the phosphate rock, 46 per cent of the steel, 43 per cent of the cement, 40 per cent of the iron ore, 40 per cent of the coal, 33 per cent of the lead, 30 per cent of the silver, 27 per cent of the zinc and 22 per cent of the world's gold.

The mineral beds of the United States are not equally distributed throughout the country. Pennsylvania has been for a long time and is yet the leading state in the production of minerals, nearly one-third of the mineral output of the Union coming from this state; but the centers of production shift and it is difficult to foretell how long our banner state's supremacy will last. The primacy in quantity of petroleum produced passed within the last two years from Ohio to California and from California to Okla-

homa; within a year (1907-8) Colorado has taken the place of Montana in silver, and Idaho that of Missouri in lead.

Our most important coal-producing states are Pennsylvania, Ohio, West Virginia, Alabama, Indiana, Iowa and Colorado; the largest supplies of iron ore come from Minnesota, Michigan and Alabama; copper is mined in Montana, Arizona and in the Lake Superior regions; lead in Idaho, Colorado, Utah and Missouri; zinc in Missouri, Kansas and Colorado; gold in Colorado, California and Alaska; silver in Colorado, Montana, Utah and Idaho. Mineral deposits are worked in other parts of the country, but the enumerated states lead in the production.

The Iron and Steel Industry.—In 1905 the value of the products of our iron and steel industry was $906,000,000, as compared with $207,000,000, their value in 1870; during the same period the output in tons increased from 3,264,000 to 34,845,000, or more than tenfold. Pennsylvania leads in the production, followed by Ohio and Illinois; in 1905 these three states produced 78.5 per cent of the total value of the country's output; other important iron and steel producing states are New York, Alabama and New Jersey.

Textiles.

The census reports include under textiles material which provides substantially the entire clothing of the people in the United States, the only exception being leather footwear, the hats and bonnets of women and the summer straw hats of men. Not only hosiery, underwear and material for all the outer garments, but also a large class of articles of purely ornamental value, like ribbons and laces, are considered under the category of textiles. Under textiles are included also carpets, bed coverings, toweling, etc. In the grouping of industries according to the value of products, "textiles" rank third ($2,147,000,000 in 1905), "food and kindred products" being the first and "iron and

steel and their products" second in rank. If we consider the number of wage-earners employed, textiles occupy the first place; in 1905 they gave employment to 1,156,000 hands.

The three most important fibers used in textile manufactures are cotton, wool and silk. The United States may be ranked first amongst silk-manufacturing countries, second in cotton manufactures (the United Kingdom first) and probably fourth in woolen fabrics (the United Kingdom, France and Germany being the three leaders). Our flax and jute industries are not of great importance.

The most significant fact in our textile manufactures is the continued growth of the cotton-manufacturing industry in the southern states. As our census bulletin on textiles for 1905 puts it, "no fact relating to the industrial progress of the country is more interesting, more important or more significant to the student of social and economic conditions in the United States than the vigor, the persistency and the success of the South in introducing this branch of manufacture. Combined with the growth in the South of the manufacture of iron and steel it marks an industrial revolution in one part of the country." The progress of the southern states may be judged from the fact that within a brief period of five years, between 1900 and 1905, they increased the number of their spindles from 4,298,000 to 7,508,000; the increase in the New England States for the same period has been from 12,851,000 to 13,911,000. The cotton-manufacturing industry has never been established on a large basis either in the middle or in the western states. Massachusetts, Rhode Island, New Hampshire and Connecticut lead as cotton manufacturers in the Northeast, North Carolina and Georgia in the South.

Southern mills have the advantage of raw cotton at their doors; also of abundant fuel and cheap labor; unfortunately, some of the southern superiority is based upon an extensive use of child labor. Southern manufactures find

a market near by, ever-decreasing quantities of calico, gingham, shirtings being shipped from New England southward.

American spinners produce a much larger quantity of coarse and medium yarns and a much smaller amount of fine fabrics than the spinners of Great Britain, Germany or France.

The export of cottons from the United States is growing, although our position as an exporter of these tissues is far from being satisfactory. China is the largest consumer of our cotton fabrics.

Miscellaneous Manufactures.

In 1905 the value of chemicals and allied products exceeded $1,000,000,000, half of which amount was manufactured in the states of New York, Pennsylvania, New Jersey, Ohio and Illinois.

The making of vehicles for land transportation aggregates $640,000,000; the leading producers are Pennsylvania, New York, Illinois and Indiana.

The tanning, currying and finishing of leather is carried on most extensively in the states of Pennsylvania, Massachusetts, Wisconsin, New York and New Jersey.

The production of boots and shoes is mainly concentrated in New England, particularly in the State of Massachusetts. New England's manufactures are more than half the total output by the United States. New York, Ohio and Missouri are next in importance as producers of leather footwear.

New York, Massachusetts, Maine, Wisconsin and Pennsylvania lead in the making of wood pulp and paper; the value of this industry's products increased from about $10,000,000 in 1850 to over $188,000,000 in 1905.

A remarkable growth has taken place in the printing and publishing business. In 1905 it reached nearly $500,000,000 as compared with $15,000,000 in 1850; this shows

an enormous increase in the amount of books and periodicals, as well as an increase in the use of printed matter for business and social purposes.

The production of ready-made clothing is one of our most important industries. In a grouping of ten manufactures which in 1905 reported a value of products exceeding $300,000,000, clothing occupied the fifth place, only four industries showing a higher value of products, these being slaughtering and meat packing, iron and steel, foundries and machine shops, flour and grist mills; the five industries following the production of clothing were lumber and timber, printing and publishing, cotton manufactures, woolen manufactures, the making of boots and shoes. The total value of products contributed by this group of ten industries amounted to $6,165,000,000 or 41.5 per cent of the entire value of products contributed by all of the industries embraced in our census classification. Some of our other important manufactures are furniture making, shipbuilding, production of rubber goods, manufacture of structural material (cement, etc.), clay manufactures (bricks, sewer and drain pipes, etc.), glass making.

X. THE COMMERCIAL RELATIONS OF THE UNITED STATES WITH FOREIGN COUNTRIES.

The United States' exports are much larger than its imports; in this respect it differs materially from other great commercial nations: Great Britain, Germany and France, whose balance of trade shows each year an excess of imports over exports. The latter countries have large and manifold investments and an insignificant indebtedness abroad; they can, therefore, draw upon foreign countries for the needed supplies of raw materials and foodstuffs without any drain upon their finances. The visible cargoes entering their ports represent payments of debtor nations. Hundreds of millions of dollars are thus paid to their capitalists who own stocks and bonds in various rail-

way and industrial enterprises in every part of the world, to their shipowners, whose steamers and sailing vessels ply every sea and carry most of the foreign trade cargoes to their insurance companies, etc.

The United States on the other hand has little capital invested abroad. Until recently all of its accumulated wealth was able to find exceedingly profitable investments at home in the development of its natural resources; it owes vast sums of money to foreign investors; it has practically no merchant marine engaged in international trade and it spends through its tourists fortunes in Europe and in other parts of the world. Most of its foreign trade surplus, therefore, does not create a favorable balance in its favor, but merely offsets the payments due to foreigners; it represents also its gradually increasing investments of capital in foreign countries.

How true this is may be seen from a study of the movement of gold from and into the United States. Notwithstanding a "favorable" balance of trade in the last few decades reaching lately from $450,000,000 to $600,000,000 a year, the excess of gold imports over gold exports was never higher than about sixty million dollars a year; during the same period American bank balances abroad have not been growing very rapidly either. When in the fiscal year just ended (June 30, 1909), the exports dropped off without a corresponding decrease in imports, leaving the country with a trade balance of about $350,000,000 in its favor, it was compelled to ship over $47,000,000 of gold to pay for imports.

It is well to remember that there is nothing in itself apprehensive either in the excess of imports over exports or exports over imports; a study of the actual conditions under which such excesses occur is necessary in order to arrive at a correct judgment.

The exports from the United States consist mostly of raw and semi-finished commodities and of breadstuffs and

foodstuffs, either in crude conditions or partly manufactured.

Taking the last fiscal year (1909) as an illustration we find that crude materials for manufacture represented about 32 per cent of our total exports, their value being $521,000,000; raw cotton was the leading item on the list, it was valued at $417,000,000, an increase of about 75 per cent over the valuation in 1900.

Last year we exported foodstuffs to the value of $438,000,000 (about 27 per cent of the total); amongst foods exported, meat and dairy products occupied the first place, with breadstuffs as a close second. The latter led our exports in 1900; their value fell from $262,000,000 in that year to $160,000,000 in 1909. The decline is indicative of the future development of our foreign trade. We are approaching the time when most of the foodstuffs now exported from this country will be retained for home consumption. Our area available for tillage has been nearly all occupied; on the other hand, our population grows rapidly and tends towards concentration in industrial and commercial centers. This condition will necessarily lead to a decrease in the exports of agricultural products, which for so long a time have sustained the foreign credit of the United States and have kept its balance of trade favorable.

Our exports of semi-manufactured products equalled $230,000,000, leaving $442,000,000 or 27 per cent of the total for manufactures ready for consumption. The latter amount represented but a small fraction (not over 12½ per cent) of all the manufactures entering into international trade; this shows clearly in what direction our energy must be applied if we wish to keep our commerce at the high mark which it has reached.

Turning to the list of imports we find that the United States receives large quantities of foodstuffs. Most of the foods imported are not necessities, but more or less lux-

uries, comprising such articles as coffee, sugar, cocoa, fruits and nuts, spices and condiments, etc.; they represented in 1909 over 25 per cent of the total imports into this country.

The imported manufactures ready for consumption are mostly commodities of superior quality and finish, articles of taste and of beauty or wares embodying the latest dictates of fashion; high-grade silks and other textiles, gloves, perfumery, diamonds, ribbons, embroidery, millinery are some of the finished goods received from abroad. In 1909 the combined value of these imports reached 27 per cent of the total.

The remainder of our imports (about 48 per cent) consisted in 1909 of crude materials and other goods for use in manufactures; amongst these we find raw silk, hides, rubber, chemicals, dyes, etc.

In 1909 sugar was the largest single item of import, followed by manufactured silks and coffee; hides, skins and India rubber were next in importance.

Europe is our best customer. In 1909 it took from us goods to the value of $1,147,000,000. This commerce with Europe grew without any serious efforts on the part of the American people to foster it. The empty storehouses of Europe seek our wheat and flour, and their mills and factories buy eagerly the products of our cotton plantations and our copper mines because of the large profits they make on their original investments. The United Kingdom is our leading purchaser; our exports to this country exceed $500,000,000 a year and are more than double of our exports to Germany, our next best buyer. Our sales to France equalled in 1909 about $109,000,000, and to Netherlands $95,000,000; in the case of the latter country the figures are somewhat misleading as a large part of their imports are transshipments, mostly to Germany. A study of our export trade to other European countries shows that Italy, with a gradual development of

its manufacturing industries, has been taking an ever-increasing amount of American raw materials; the value of its imports from the United States rose from $36,700,000 in 1900 to $58,500,000 in 1909. Our exports to Belgium were $45,000,000. The least important of our European customers are the agricultural states of Europe: Spain, Russia, Austria-Hungary, etc.

In 1909 North America imported our merchandise to the value of $310,000,000, the remaining continents having taken a comparatively small share of our exports: South America $76,500,000, Asia $71,800,000, Oceania $41,390,000 and Africa $17,035,000. Considering the vast quantities of manufactured goods imported by these continents and our dependence upon them for many of our imports, the showing is very poor.

In 1909 our imports from Europe were valued at $654,322,000, from Asia at $197,548,000, from South America at $163,878,000, from Oceania at $27,062,000 and from Africa at $15,108,000.

The United States has but a small share in the trade of the oriental countries, whose imports amount to nearly two billion dollars each year. More than one billion dollars' worth of these imports is represented by goods which the United States could easily supply. The Orient has been taught to use many occidental products; it imports textiles, iron and steel manufactures, household utensils, agricultural implements, foodstuffs; the market is large and because of the size of the tropical and subtropical population and the wealth of natural resources which it can send in exchange for purchases, it is a market full of possibilities. The market occupies a vast section of the world stretching westward from southern China in Asia to Morocco in Africa, a section covering the greater part of the two continents and containing within its confines more than half of the world's population. With the exception of trade with Japan and northern China, whose geographic

proximity to our western shores gives us an advantage of distance, the United States supplies but one per cent of the total imports of the Orient.

Many reasons have been advanced to explain the success of the European and the failure of the American business men in the oriental commerce; the most important of these are as follows: our manufacturers and merchants do not study the habits and requirements of the people in the Orient, the usages and the local conditions of their markets; they offer for sale surplus products made for the cities and farms of the United States, but entirely unsuited for tropical regions. European manufacturers send agents into these countries to learn the needs and wishes of their prospective customers; they establish banks which facilitate the extension of long credits demanded by tropical tradesmen; they connect by direct steamship lines their shipping centers with the harbors of the Orient and thus are able to deliver goods quickly and on time. On the other hand, our merchants enter the field with no agents to represent them, no banks to permit the opening of accounts and the granting of credits, no steamers to allow a speedy fulfillment of contracts.

In packing goods our shippers disregard the possible effects of long sea voyages and of rough handling of merchandise in countries where labor-saving devices and machinery are unknown and where the most primitive methods of transportation exist. Many of our consignments must be subjected to repacking at the place of arrival, on the shore, because the boxes and bales in which they come are too heavy and bulky to be moved farther inland; frequently our products come in a condition unfit for consumption, because proper precautions are not taken to protect them against atmospheric and other harmful influences.

We send English circulars, quoting prices in dollars and cents for quantities expressed in American weights

and measures and we expect that these circulars will be read by people unfamiliar with our language and our monetary system. These circulars are discarded as soon as they reach their destination.

Many other reasons of a similar nature could be assigned for our failures to win markets where markets must be won, won in the face of competition. The remedies are near at hand.

1. Our business firms should be personally represented by agents whose object should be the study of local conditions and peculiarities; then our selling campaigns could be more intelligently and more vigorously conducted.

2. We should be willing to grant a more liberal system of credits, a system more in keeping with requirements in the desired market.

3. We should send more complete, more varied and better lines of goods.

4. Careful attention should be given to proper packing.

5. Shipping directions should be strictly complied with.

6. We must provide better means of communication and transportation.

7. Our advertising matter should be written in the language of the people for whom it is intended.

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Department of Commerce and Labor.

The Department of Commerce and Labor publishes most of the information bearing upon industry and commerce. The publications are issued by several bureaus, or divisions of the department and include the following:

The Annual *Report on the Foreign Commerce and Navigation of the United States,* containing a mass of detailed information as to the movement of merchandise into and from the United States and in Interstate Commerce;

A monthly *Summary of Commerce and Finance* in which besides the regular statistical data may be found valuable monographs on special topics, such as: *Great Canals of the World, Colonial Administration, Commercial China, Commercial Japan, Commercial Cuba, Warehousing Industry,* etc.;

Statistical Abstract of the United States;

Consular Reports: (a) Daily, of special value to business men and to newspapers; (b) Monthly, being a reprint of those daily bulletins which are considered of more permanent value; the reports contain also communications which do not find their way into the daily bulletins; (c) *Special Consular Reports;* some of the topics treated are on *Winning Foreign Markets, Industrial Education, Tariffs, Merchant Marines,* etc.;

The Census. In 1902 a permanent Census Bureau was organized which issues each year a number of bulletins; most of those recently published deal with the manufacturing Census of 1905. The bureau published comprehensive volumes on *Mines and Quarries, Telegraphs and Telephones, Street and Electric Railways,* etc. A general census of the United States is taken every ten years; it is a gigantic investigation covering every step in the social and economic life of the Nation;

Publications of the Bureaus of Labor and of Immigration;

Bulletins and Reports of Fisheries.

Other Departments of the Federal Government.

The Mineral Resources of the United States is issued by the Geological Survey of the Department of the Interior.

Year Book of the Department of Agriculture, published annually, contains valuable articles on agricultural subjects from a technical and from a commercial point of view.

The various bureaus and divisions of the Department of Agriculture, such as the Bureau of Animal Industry, of Plant Industry, of Soils, of Entomology, the Forest Service, the Bureau of Statistics, issue numerous bulletins and reports; they discuss such topics as: *Useful Fiber Plants, Beet Sugar, Cotton,* etc.

Reports of the *Bureau of Insular Affairs of the War Department* deal, amongst other things, with economic conditions in the Philippines and Porto Rico.

The Report of the Secretary of the Navy contains information about our Merchant Marine.

The Annual Report of the Postmaster General considers the transmission of commercial intelligence, the parcels post and the free rural delivery, second class mail matter, etc.

Congress.

Amongst *Congressional Documents* of special interest are the *Merchant Marine Commission Report,* published in 1905, and the *Report of the Industrial Commission* (1900-1902); the latter is a most thorough piece of work in 19 volumes, and shows clearly the economic status of the United States at the close of the nineteenth century. Vol. VI deals with the distribution of farm products and Vol. XIX (the Final Report), gives an excellent resumé of the laborious and tedious investigation.

Bulletins of the *International Bureau of the American Republics* are of great value to those interested in the trade conditions of Mexico and of Central and South American republics. The information submitted is most carefully compiled and unbiased; it aims to be accurate and up-to-date. Our Secretary of State is the ex-officio chairman of the bureau and its Governing Board is composed of ambassadors and other diplomatic representatives of the Latin-American republics.

The official publications of the *British Government* cover more or less the same ground as the works published in the United States; the most interesting of these publications for the student of commerce are: the *Miscellaneous and Annual Series of the Diplomatic and Consular Reports of the British Foreign Office,* the annual reports on the *Trade of the United Kingdom with Foreign Countries and British Possessions,* the *Statistical Abstract for the United King-*

dom, the *British Statistical Abstract for Foreign Countries,* and the publications of the *British Board of Trade;* the work of the last corresponds to that of the Department of Commerce and Labor in the United States.

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